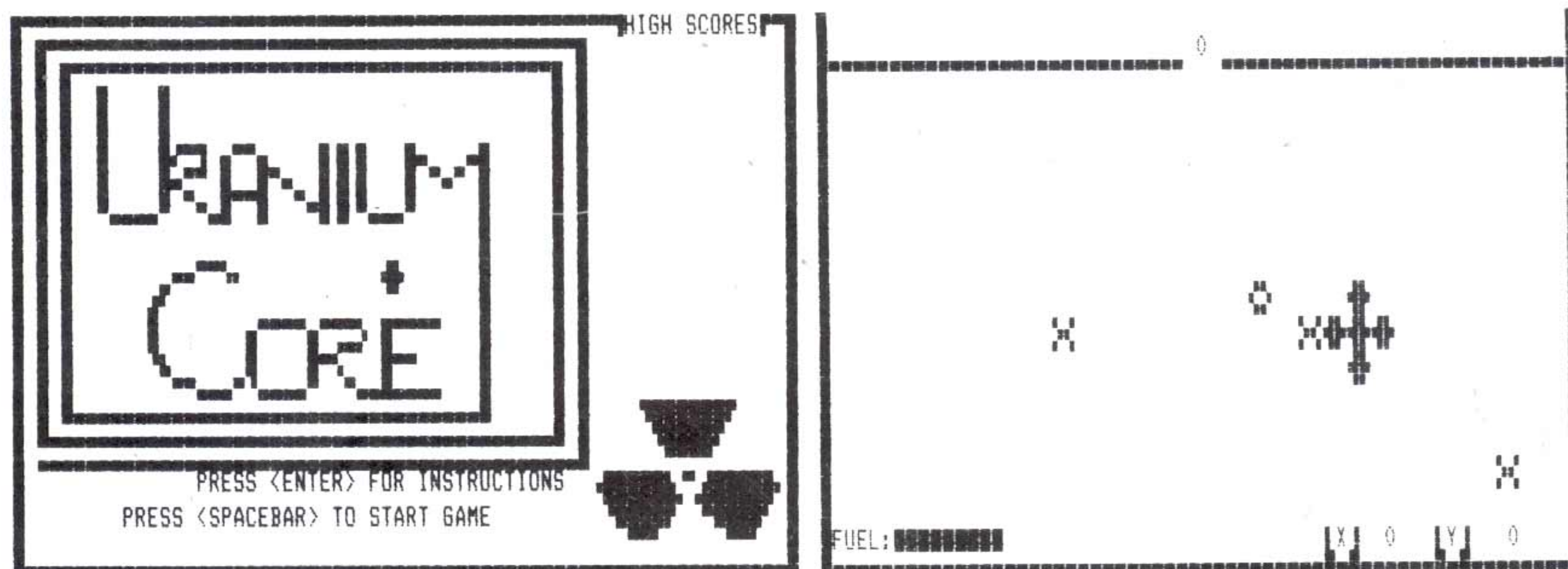


MICRO-80

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Vol. 4, Issue 1, August 1983



URANIUM CORE

Also in this issue:

PROGRAMMING:

More Arguments for Machine
Language Subroutines

True or False

REVIEWS:

Typing Tutor

Pyramid 2000

HARDWARE:

The Dreaded Reboot

SOFTWARE:

- Aristocrat — Colour
- Compound Multiplication
and Long Division Level I
- DEFUSR Function — Level II
- Single Key Menu — Model 3
- Starshoot — Level I
- Startrek — Colour

• TRS-80 • SYSTEM 80 • VIDEO GENIE
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• TRS-80 COLOUR COMPUTER

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**** CONTENT ****

Each month we publish at least one applications program in BASIC for each of the microcomputers we support. We also publish Utility programs in BASIC and Machine Language. We publish articles on hardware modifications, constructional articles for useful peripherals, articles on programming techniques both in Assembly Language and BASIC, new product reviews for both hardware and software and we print letters to the Editor.

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***** EDITORIAL *****

As we begin volume four of MICRO-80, a number of profound changes have taken place in the area of personal computers of particular interest to our readers. Production of the TRS-80 Model I stopped long ago and the System-80/Video Genie is also no longer being made. The introduction of the Models 4 and 12 will no doubt see an end to the production of the Models 2 and 3. But despite this, the most popular computer in the Australian home is still the Model I or System-80 and the majority of our readers own 16K Level 2 cassette-based systems. Disk users and Model 3 owners comprise a large proportion of the remainder followed by a smaller number of Colour Computer and Peach owners. What then can our readers expect from MICRO-80 in the coming months?

Firstly, a wide variety of programs to run on your computer including games, utilities and applications. More articles on programming techniques, hardware projects and topics of special interest such as the technical aspects of disk drives and operating systems, at various levels to suit the beginner and the more advanced user. Critical reviews of both software and hardware products available for your computer and as many hints, tips and useful facts to help you learn more about your computer as we can squeeze into the magazine. As a measure of our sincerity, we are putting the finishing touches on a free software offer to all our new subscribers and those renewing their subscriptions (starting with this issue). For our Group One and Form Three readers, the Software Library has been revised and improved with the addition of several new programs. A completely new Software Library has been developed for our Colour Computer readers and Peach owners will get a choice of one of three commercially available games!

BUGET COMPUTERS

At the moment, the interest of computer manufacturers is focussed on the potentially very large domestic market. Although this section of the community is eager to learn more about the personal computer, it is also very reluctant to outlay too much money to buy one. Therefore, the recent trend has been to offer a very low cost entry into computing like the VZ-200 priced at \$199. So it is not surprising to see Tandy introduce the MC-10 Colour Computer into the U.S. market for just under \$US120.

A smaller, less powerful machine than the TRS-80CC, the MC-10's main features are its compact size, colour graphics and sound. Inside it features the Motorola MC6803 processor, 4K of RAM (which can be expanded externally by an extra 16K) and an 8K BASIC interpreter in ROM. Although the cassette and RS232 ports maintain hardware compatibility with the TRS-80CC, the different Microcolour BASIC and the different processor prevent direct software compatibility. I expect that when released in Australia, the price of the MC-10 will be comparable with that of the VZ-200.

Unfortunately, the advantages of low-price are offset by the general lack of good quality software. No matter how impressive the hardware, without software it is of little use to anyone. It will also be interesting to see the price of software for these machines - at around \$25 per game, it would require the purchase of only 8 games before you exceed the price of the machine itself!

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***** INPUT/OUTPUT *****

From: M.J. Moore - Oxley, Qld.

I would appreciate your publishing this plea for help in the "Input/Output" section of your magazine in the hope that a reader may have overcome the problem that I have been experiencing.

I have a System 80 to which I have attached a TC8 Cassette Operating System via a Syspand 80 bus converter. The system will only enable switching of the remote cassette motor and not transfer of programs or data. The TC8 has been tested and operates perfectly on the TRS-80. I removed the Syspand 80 and connected the TC8 directly to the System 80, but the result was the same.

It would appear that I have a software problem with the driver routine for the TC8. Can anyone please help?

(At a guess, I would say your problem is related to the cassette port differences between the System 80 and the TRS-80, particularly in the treatment of bit 2 (see letter p.5 July '82 issue). Perhaps one of our readers can provide a solution to this problem - Ed.)

From: P. Bunyan - Jervis Bay, A.C.T.

I am in the process of building the joystick interface controller and was wondering if the interface can be used as a Centronics parallel interface for a printer or a serial interface. I think it would be good to have an article about this in MICRO-80. In the meantime, could you give me some information as to how the joystick interface could be used to control a printer?

(I presume that you are referring to the "Joystick and I/O Ports" project by Allan Dent, in

which case the answer is 'No'. This joystick interface is not suited to such an application and Allan doesn't recommend trying to use it in this way. However, I agree that it would be good to have a constructional article on a Centronics printer interface in the magazine. Any takers? - Ed.)

From: K.W. Glasson - Karalee, Qld.

I have noticed from time to time in MICRO-80 a few one line programs and I thought you may be interested in one of my "one liners". I call it a Mosaic Generator for reasons which are obvious once you've run it. It helps some people to relax just as you can do by staring at an open fire or by watching fish swimming around an aquarium.

Might I add a suggestion that when the time lapse between your acceptance of a program and its appearing in MICRO-80 exceeds say 6 months, that the contributor be approached for any new information concerning the program prior to its going to press. In my own case, I submitted a program called "Loan Calculation Package" and its acceptance for publication was a source of pride. However, its appearance in MICRO-80 some 18 months later was a source of embarrassment. During the interim I had improved it in many ways and your magazine could have had the improved version for the asking.

Here is the "one liner" -

```
10 CLS: FOR S = 1 TO 5: FOR D = 1 TO 100: X = RND(63): Y = RND(23): SET (X,Y):
  SET (127-X,Y): SET (X,47-Y): SET (127-X,47-Y): NEXT D: FOR F = 1 TO 500: NEXT F:
  NEXT S: GOTO 10
```

I hope you like it.

(Thank you for your suggestion and I'm sure our readers will find the one-liner interesting. Although what you propose has merit, we believe that it would not be practical to implement. Most, if not all, of the programs that we have on file are at least six months old and we would need to contact the authors for every program to be published. The updated version (if any was available) would have to be tested and the accompanying description altered where required. Assuming that no problems arise, this procedure would at least double the amount of time spent in the preparation of each program and inevitably lead to production delays - an intolerable situation. -Ed.)

From: Gavin Daniels

I have recently purchased an expansion unit and disk drives for my System 80 MK II and I am finding it difficult to put all my system programs from tape to disk. Could you please help remedy this problem by specifying a particular program which can do it, or is it possible to change the listing of the System Copier on the MICRO-80 cassette so it will save to a disk?

Is it also possible to change all my machine language programs like ASYLUM which save data to cassette to save it to disk? If so, could you please send me the modifications for the following programs: ASYLUM, ADVENTURE 9, EDITOR ASSEMBLER PLUS, ZMON, CUBE, HOUSEHOLD ACCOUNTS VERS 3.0, HELLFIRE WARRIOR, BMON, ROBOT ATTACK, GALACTIC EMPIRE, etc.

Please note that the games GALACTIC EMPIRE (Broederbund software) and HELLFIRE WARRIOR (Dunjonquest) are written in BASIC.

(Disk operating systems, like DOSPLUS and NEWDOS80, provide utilities for exactly this purpose, viz. TAPE and LMOFFSET respectively. These do not, however, relocate machine language programs in the true sense of the word. They rather displace the program so that it can be LOAded from DOS and add an appendage that is executed first and which moves the program to its correct location in memory before passing control to it.

Modifying machine language programs intended for cassette systems so that they save and load data from disk is possible, but not recommended. A much more expedient method is to buy the disk versions of these programs from the original vendor. To save and load data from BASIC programs is somewhat easier but depends on the given program. The Software Library booklet lists modifications for the disk version of Household Accounts as an example of how it can be done. Note that there is a correction to these in Microbugs (August '82 issue). -Ed.)

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DEPARTMENTS

***** KALEIDOSCOPE *****

This month's programs for the Colour Computer (Aristocrat and Startrek) show some ways to get around the limiting text display. Although we have received one or two programs from our readers,

we hope to see a lot more in the near future.

Here are some more hints you may find helpful on your Colour Computer.

Don't be alarmed or discouraged if your program produces a syntax error for no apparent reason. Evidently, there is a bug in the BASIC ROM that sometimes causes a program using the PCLEAR statement to be stopped with a syntax error the first time it is RUN. The cure is simply to RUN it again. If you get another syntax error, then you'd better look closely at the line in question.

Although most of the machines in Australia should contain Version 1.1. ROMs, some very early or imported machines may contain Version 1.0 ROMs. There are rumours that the latest machines in the U.S. have 1.2 ROMs and there may be a few here in Australia. To check exactly which ROMs your Colour Computer contains, type 'EXEC 41175 (Enter)'.

If you find the green background colour a bit hard on the eyes then try the following:

POKE 359,57 : SCREEN 0,1 (Enter)

This changes the background colour to orange reasonably permanently. However, if for some reason your computer appears to lock up, then type (even if it doesn't appear on the screen):

POKE 359,126 (Enter)

What has happened is that the screen displays the graphics page and doesn't return to the text page as it would under normal circumstances.

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***** PEACH BOWL *****

Two more programs for our Peach users this month - Aristocrat and Startrek. Originally submitted for the Model 1, they have been modified to run on the Peach. However, a few of our Peach readers have sent in programs and we expect to publish some of these next month.

In September 1982 issue, we published a program for our disk users called Sector Editor. Although this program is a very useful utility with which to explore and repair disks, it has the drawback that the BASIC screen display routines are very slow. Well, one local user by the name of Geoff Drury developed a modification to the original program to speed up the displaying of information. What takes up a lot of time is the conversion of the binary sector data into displayable ASCII data and if this can be done by a machine language subroutine rather than in BASIC, the process is sped up enormously. Below is a list of the modification. Try it and see the difference.

```
50 SCREEN0,,0: CLEAR 4096+128:MCODE$=STR
   ING$(120,"#")
52 MCADDR=256*PEEK(VARPTR(MCODE$)+1)+PEE
   K(VARPTR(MCODE$)+2):ADR=MCADDR
54 READ B$:IFB$<>"END" THENPOKE ADR,VAL(
   "&H"+B$):ADR=ADR+1:GOTO54
56 WIDTH 80:CLS:DIM SECTOR$(16%):' SECTO
   R$() - USED IN THE SECTOR COPY
   ROUTINE - SEE LINE 1000
90 PRINT "Function "; : CMD$=INPUT$(1) :
   PRINT CMD$ : ON INSTR(1%,"DZCQ",CMD$)
   GOTO 110,860,980,1370
1999 '
```

```
'          PRINT/DISPLAY SECTOR DAT
A          ,
```

```
2000 CODEADDRH=PEEK(VARPTR(SECT$)+1):COD
   EADDRL=PEEK(VARPTR(SECT$)+2)
2010 POKE MCADDR+&H63,CODEADDRH : POKE M
   CADDR+&H64,CODEADDRL
2020 EXEC MCADDR
60100 DATA 6F,8D,00,5E,AE,8D,00,5B,1F,10
   ,C4,0F,1F,9B,34,16,A6,8D,00,4E
60110 DATA 4B,4B,4B,4B,8D,DD,32,C6,04,8D
   ,3C,35,16,10,8E,00,10,A6,80,34
60120 DATA 36,BD,DD,32,BD,B1,16,35,36,31
   ,3F,26,F0,34,36,C6,06,8D,20,35
60130 DATA 36,30,10,C6,0F,34,36,BD,FA,73
   ,BD,B0,BE,35,36,30,8B,10,6C,8D
60140 DATA 00,10,A6,8D,00,0C,B1,0B,25,AE
   ,39,BD,B1,16,5A,26,FA,39,0,0,0
60150 DATA END
```

DELETE LINES 2000 TO 2140

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***** GROUP ONE *****

For our Level 1 users this month we have Starshoot and Compound Multiplication and Long Division, while for our Level 2 readers we present Uranium Core and a utility to provide the DEFUSR statement in non-disk systems.

Reader John Smith has sent in these helpful hints:

In some games and competitive computer activities it is useful to have a limited time for input. This facility is not available as a BASIC function in the TRS-80 machines, although it is available in Assembly on the Model II. This latter doesn't help people like me who haven't yet learned how to use such straining symbolism (!), and is no help to Model I and Model III owners, who, I believe, have no such facility. So I wrote the following BASIC routine to solve the problem. It is quite short and simple. Most of the listing here is REMarks, making the listing self-explanatory. I trust it may interest your readers.

```

100 '          ***** "TIMETRY" *****
110 '   J.D.SMITH, HAWTHORN, SOUTH AUSTRALIA
120 '   <<<<< 6th. March, 1982. >>>>>
130 'This is a means of limiting the time allowed for input to a programme.
140 '
150 REM >>>NOTE<<<: In Level II BASIC the apostrophe (') may be used
160 '   instead of the word "REM". For Level I you have to do a bit more typing
!
170 '
180 '*****Set the parameters*****
190 '
200 SEC = 10 'Time in seconds allowed for an input to be made.
210 LM=4 'LM is the limit on "no entry" loops.
220 TD=SEC*46 'TD is the time delay count. Multiple will depend on
230 '   clockspeed of computer. This suits Models I & III.
240 '   For Model II use a factor of 100 instead of 46.
250 TC=0 'TC is the count of cycles with no entry at all.
260 '
270 '*****This is the time-input loop*****
280 '
290 PRINT"YOU HAVE" SEC "SECONDS TO ENTER A NUMBER OR WORD"
300 TM=0:A$=""
310 I$=INKEY$:TM=TM+1:IF TC=LM THEN 380ELSE IF TM=TD THEN 370ELSE IF I$=""THEN 3
10
320 IF I$=CHR$(13)THEN 470'Note:CHR$(13) is <ENTER>.
330 PRINT I$;
340 A$=A$+I$ 'A$ is used to build up the input string.
350 ' A string is needed for INKEY$. For numerical input use VAL(A$).
360 GOTO 310
370 TC=TC+1:PRINT"TOO SLOW":GOTO 300
380 PRINT"TOO LONG. TRY SOMETHING ELSE!":GOTO 520
390 '
400 '*****End of input loop*****
410 '
420 'It is good programming practice to have an "END" statement only
430 ' at the actual end of the listing. Some computers do not accept
440 ' programme entry or will not list after an "end", so it is good
450 ' practice to either use a "GOTO" as in line 360 above, or
460 ' to use "STOP" to terminate elsewhere than at the last statement.
470 PRINT:PRINT "A$=" A$
480 PRINT "VAL(A$)=";VAL(A$)
490 A=VAL(A$)
500 PRINT"VAL(A$)+2=";A+2:PRINT
510 GOTO 250
520 END

```

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***** FORM THREE *****

Our Model 3 cassette users should protect high memory and move the DEFUSR routine there. Exclusively for our Model 3 NEWDOS users we present: - Single Key Menu. However, with a little bit of hunting around, I suspect users of other DOS's should be able to adapt it to their system.

A word of caution regarding this last program:-

Changes are made to the Operating System's two most important modules, SYS0 and SYS1. These

should be checked very carefully. These should be checked very carefully. Take note of the author's suggestion and work with a backup copy of your system disk. Also, it may happen that the vendor of the DOS may supply corrective patches that will conflict with these changes sometime in the future. For your benefit record the changes made and keep it in the DOS manual for future reference.

Finally, I wish to draw the attention of our Model 3 cassette subscribers to the Microbug referring to the Movie utility. I hope this has not caused too much inconvenience.

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PROGRAMMING

***** TRUE OR FALSE? *****

by Noel Rossiter

Power up your trusty TRS-80 Level 2, and when all is READY key in:

```
?(X=0)
```

and quick as a flash, comes the reply:

```
-1
```

Strange? Well, now try:

```
?(X=-1)
```

to which, of course, you get the answer:

```
0
```

To complete the exercise, key in and run the following:

```
FOR I=1 TO 10:X=(X=0):?X;:NEXT
```

and you will get:

```
-1 0 -1 0 -1 0 -1 0 -1 0
```

What you have been doing here is printing the two possible values of the truth function. Enclosing a statement like $X=0$ in brackets to make $(X=0)$ is an indication to Level 2 BASIC that the truth of the statement is to be tested, and the appropriate value of the truth function returned; as indicated already, the truth function can only have one of two values, -1 if the statement tested is true, and 0 if it is false.

The statement $X=(X=0)$ causes X to change its value from 0 to -1 and the reverse each time it is executed, because if X is equal to 0 the expression in brackets is true (truth value = -1) so that -1 is returned and X is put equal to that value; on the other hand, if X does NOT equal 0 the truth function is returned with a value of 0 and X is set to that value. This, of course, can be used to make a flip-flop switch in programs where particular program sequences have to be executed alternately; typically:

```
.....
90 X=(X=0):IF X=0 THEN 200
100.....
.....
190 GOTO 90
200 .....
.....
290 GOTO 90
```

There are other convenient uses of the truth function; try your machine on:

```
X=0:FOR I=1 TO 10:X=X-(I<6)+(I>5):?X;:NEXT
```

You will, by now, be able to figure out that the response will be:

```
1 2 3 4 5 4 3 2 1 0
```

Since the truth function can be multiplied and divided, as well as being added and subtracted ($Y=5*(X=3)$) will return Y with a value of 0 unless $X=3$ in which case Y will have a value of -5) the truth function offers an elegant alternative to the use of READ and DATA statements to set values on a program. For example, suppose the 27 values of a variable X(I) were to be:

```
1 2 3 4 .....9
10 20 30 .....90
100 200 300 .....900
```

(Don't ask me why), you could set up a DATA statement containing the 27 values and use:

```
FOR I=1 TO 27:READ X(I):NEXT
```

Alternatively, you could omit the DATA statement, and use:

```
FOR I=1 TO 27:X(I)=I-9*(I-10)*(I>10)-90*(I-19)*(I>19):NEXT
```

You can also use the truth function to clip off a variable at maximum and/or minimum values; for example:

```
IF K>60 THEN J=60 ELSE IF K<0 THEN J=0 ELSE J=K
```

allows J to range between 0 and 60 according to the value of K; so does:

```
J=K+(K-60)*(K>60)+K*(K<0)
```

Finally, you can avoid the /0 error by use of the truth function:

```
P=Q/(R-(R=0)) may return a wrong value of P if R=0
```

but $P=Q/R$ would cause the program to bomb out.

I have not attempted to exemplify all the places in which it may be useful or convenient to make use of the truth function; I have only listed a few cases where I have found it useful. I must admit that minus sign complicates things a bit, and I always have to take a deep breath and work things out carefully. I understand that Level 1 BASIC returns a truth value of 1 if true, and this would make life a little easier. However, the Level 2 arrangement has the benefit of being consistent with the NOT logical operator, because NOT 0=-1 and NOT-1=0. I guess we can't have everything.

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***** MORE ARGUMENTS FOR MACHINE LANGUAGE SUBROUTINES *****

by S.H. Liggins

To speed up my BASIC Programs I had often considered including machine language routines, but I didn't like the usual methods of doing it. I wanted the routines to be entirely relocatable and suit machines of any size. I didn't want to worry about setting Memory size, or other fiddling with BASIC pointers. I wanted to be able to include several such routines in the same program without worrying which was where. At times, I also needed to pass more than the single argument allowed by BASIC.

So I decided to store them in integer arrays. The main disadvantage is that they are slightly more tedious to use, as it is necessary to ensure that BASIC doesn't do any sneaky relocation of variables at critical times.

An example is the "BEEP" which I use for error warnings in data entry programs.

INITIALISATION:

```
AG% = 0 : AD% = 0 : RE% = 0
```

Argument, address, result variables

```
READ I : DIM BP%(I)
```

Define array to store the routine

```
FOR J = 0 TO I
  READ BP%(J)
```

Store the routine

```
NEXT J
```

```
DATA 30,4120,32717,15882,2049,9038,9054,-9755,-9759,1816
```

```
DATA 32717,-20736,19720,31068,-14153,-18565,16072,17154,
```

```
DATA -43,-496,8253,3576,-3296,-18680,456,-1,12321,2304,
```

```
DATA -712,6361,-52,-1
```

SUBROUTINE:

```
(AG% already set up with frequency * 256 + duration)
```

```
AD% = VARPTR(BP%(0)) : DEFUSR=AD% : RE% = USR(AG%) : RETURN
```

From the above the persevering reader will notice that the DATA statements contain 2 byte integer values to be read into array BP% rather than 1 byte values to be POKed into memory.

It is important that no variables be created between the DEFUSR statement and the USR statement. I created all the variables in the initialisation routines to be on the safe side.

A second example is the familiar 'store/restore screen display' problem. It is a simple bulk move, requiring three arguments, source address, destination address, and number of bytes. Each argument is stored in the appropriate part of the MV% array.

INITIALISATION:

```
VD% = 15360 : AD% = 0 : RE% = 0
```

Video addr, M/L addr., result variables

```
DIM ST%(512)
```

Storage for screen (= 1024 bytes)

```
READ I : DIM MV%(I)
```

Define array to store the subroutine


```

FOR J = 0 TO I
  READ MV%(J)                                Store the subroutine
NEXT J

DATA 0,8448,0,4352,0,256,0,-4664,-13904

STORE SCREEN:
MV%(1) = VD%                                Source
MV%(3) = VARPTR(ST%(0))                     Destination
MV%(5) = 1024                               Length
AD% = VARPTR(MV%(0)) : DEFUSR = AD% : RE% = USR(0) : RETURN

RE-DISPLAY SCREEN:
MV%(1) = VARPTR(ST%(0))                     Source
MV%(3) = VD%                               Destination
MV%(5) = 1024                               Length
AD% = VARPTR(MV%(0)) : DEFUSR = AD% : RE% = USR(0) : RETURN

```

Curious readers will be wondering why the arguments are stored in MV%(1), MV%(3) and MV%(5). This is because the actual machine language code is as follows:

```

NOP      LD HL, source
00      21      ssss
MV%(0)..... MV%(1)

NOP      LD DE, destination
00      11      dddd
MV%(2)..... MV%(3)

NOP      LD BC, length
00      01      1111
MC%(4)..... MV%(5)

LD A,B   OR C   RET Z   LDIR.....   RET
78      B1      C8      ED      B0      C9
MV%(6)..... MV%(7)..... MV%(8).....

```

Note: Non-disk users will have to POKE AD% into 16526,16527 as usual instead of DEFUSR = AD%

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REVIEWS

***** PYRAMID 2000 BY RADIO SHACK *****

A Review by Brian J. Fillery.

I had read a couple of reviews of Pyramid before I got the chance to really try it out myself. The first was written by someone who obviously did not like adventure games, and he damned it out of hand. The second review was kinder and gave me hope. Needless to say, neither of these reviews were in MICRO-80 nor were they Australian.

I can get as frustrated as the next man, so I was wondering what I would do with Pyramid. Well, I did get frustrated, but isn't that what the game is about? Truthfully, it is a difficult game for those with no ingenuity. You have to use your brain to do things, to work it out.

When the game starts, you find yourself outside an entrance to a Pyramid (where else?). You have to communicate with your Astral self, they say in the large book that comes with the game. It is large in size, but tells you very little of use. Hence, use your brain!

Whilst I was playing the game, I felt hampered talking in two-word sentences to my Astral self so I decided that it was a rather dim robot instead. This suited my personality.

The first thing that comes up is a message. "Welcome to Pyramid"...then nothing happens. In desperation one presses ENTER and the game starts. You instruct your robot/astral self to 'go in' and from there on, you are on your own. There are serpents, gold nuggets, rooms with hieroglyphics, bottomless pits, but you use your wits to get you round. If you have any sense, you will make a map of your various turns, so you know where you are.

There are various things you can do with two-word sentences. You can go, get, drop, look, take, climb, throw, etc. If you're not sure what you have collected, you can take 'inventory' and 'score' will tell you how badly you are doing.

There are apparently about 30 rooms and one 10 room maze. I didn't get much further than about 6 rooms, but time was not on my side and I didn't make a map, which was stupid. Was it my imagin-

ation or did the rooms change round the second time I played it?

If you are desperate you could try peeking into the game to find out how it works and what all the right words are, but then what is the point of playing it?

This is an adventure game. It is hard for some and easy for others, but it will certainly keep you entertained for a long time to come.

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***** MICROSOFT TYPING TUTOR *****

A Review by A.F.J. Bell

This cassette based program requires 16K, and comes from the producers of the BASIC used in the TRS-80, and of such great programs as EDTASM Plus and ZBUG. My copy cost \$19.95.

It comes with an excellent 20 page manual which simply and clearly explains what the program does and why, how to set the program up, and how to use it. It also has some hints on good typing.

At the beginning of the program one is offered the options of learning letters, numbers, or symbols. After the computer sets itself up, one is offered the option of "Typing Tutor" or "Practice Paragraph".

If one chooses Typing Tutor, two blocks of four randomly chosen characters will be displayed on the screen with the cursor underneath showing that one has to type the indicated lesson. The lessons are set out so that the easiest characters are practised first. At the end of the blocks a new lesson is generated, depending on the results of the previous lesson. That is, if one is typing a given character accurately and quickly, then it is removed and replaced by another character. After 10 lessons the computer gives a progress report, and then allows the options of slower, same, or faster response, or of Practice Paragraph. If Practice Paragraph is chosen, the computer will generate a several line paragraph using only the characters already practised, and one types the characters displayed just as in the Typing Tutor option. At the end of the Practice Paragraph one's results are analysed and displayed, and the options of Typing Tutor and Practice Paragraph are again allowed.

I found this an easily understood and enjoyable to use program, and had no difficulty putting it on ESF wafer. Better still, it helped me to increase my speed and accuracy. I strongly recommend it.

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HARDWARE

***** THE DREADED REBOOT *****

by R.G. Burgin

I wonder how many of us have been typing away on a Model I TRS-80 only to suddenly have the disk drive start up and have the whole system reboot for no apparent reason? Of course, there is always a reason. It is just that us mere mortals have a little more trouble finding it than the computer gods who write the magazines but fail to give us answers we can access.

My system on 48K, LNW expansion, MPI B92, and Dick Smith Printer under NEWDOS 80 V2 gradually developed the dreaded reboot to the point of being almost unusable. I believe the problem is almost unknown if the keyboard is used alone. It certainly never happened to me when I only had 16K. It seems obvious that the more that is hung onto the system, the more prone it is to trouble. Well, Tandy did introduce the Model III for some reason, didn't they? I don't think they really care about RFI or the Model I wouldn't be, would it?

OK, the increased number of bits and pieces in an expanded system will unfortunately add to the number of spontaneous reboots; after all, there's more for the odd cosmic ray to hit. It only takes one bit in the 48K of RAM to be a little doubtful and bingo! Even if it doesn't reboot, the CPU is off in never never land, ignoring the keyboard.

You and I can't do anything about the acts of God like the above, but you sure can take the steps I took to ease my problems. The first area to look at is the push on edge card connectors tying the system together. Good practice says that all the contacts should be gold-plated to prevent corrosion. After all, we are dealing with radio frequency currents at very low power levels so corrosion is almost guaranteed. So why didn't Tandy gold-plate the connectors? It wouldn't be too expensive when the PCB was bare. After all, the plug makers can do it and their prices aren't too bad.

You can pull everything to bits and clean the contacts with a pencil eraser - it works, for a while. Don't forget the disk drive and printer connectors. KEEP OUT of the disk drive - its makers weren't so frugal - the contacts here are gold-plated. If yours aren't, have a good think about what the rubbings from the eraser could do inside before having a go.

If you read any of the American magazines on computing, no doubt you will have seen methods of gold-plating the contacts of existing PCB's. Forget it! To buy the chemical needed would cost in the region of \$400.00 in Australia plus some gold. I know, I spent a small fortune in phone calls to find out.

There is advertised in the American magazines another fix called Gold Plug 80 for about \$10 US per plug for which I very nearly sent off the money. But would I get it sent to a foreign country, and even if it is a reputable company, how long would it take? The solution, however, is a lot nearer to home than that. Strangely (? - Ed.) it was MICRO-80 themselves who solved my problem. I was in their office having a quiet snoop and decided to have a bit of a grizzle about the problem when they suggested I go and see Grantham Pty. Ltd., in Gilles St. Adelaide.

These good people produced a connector strip of 80 gold flashed contacts which can be cut off at the desired length and soldered to the existing contracts. The strip is coded S-700 QQ 170 and was less than \$25 when I got mine. I have had no further reboots caused by bad cable connectors since fitting these gold contacts. Power line surges have been the cause of some further problems but if the Editor is willing, we might be able to discuss that another time.

(Certainly. By the way, Grantham Pty. Ltd. is now known as Magmedia at the same address - Ed.)

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***** MICROBUGS *****

Although we make every effort to ensure accuracy in the material we publish, inevitably errors and omissions will occur. In this section, we print corrections to those bugs that have been reported.

CHECKSUM Vol. 3, No. 11 October 1982 pp.31-32.

The source listing printed in the magazine is for the disk version of the program. The Level 2 version should have the following changes made:

- (1) in line 250, the Origin should be 41E2H.
- (2) in line 1000, the Origin should be 428AH.

MOVIE FOR MODEL 3.

The modified version of MOVIE for the Model 3 that appeared on the October 1982 cassette was not the final version and does not work on the Model 3. This month the cassette includes the correct copy of MOVIE for Model 3 users. The October 1982 disk contained the final version and is not affected by this correction.

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***** USERS' GROUPS *****

The following is a list of User's groups of which we are aware. Many are interested in a wide variety of computers. For further information about any of the groups, contact the person indicated. If you have a group not mentioned here, please let us know so that it can be included in this section.

** AUSTRALIA **

AUSTRALIAN CAPITAL TERRITORY

CANBERRA GROUP

Cont: Bill Cushing
10 Urambi Village, Kambah, 2902.
Meet: 3rd Thurs. monthly, 7.30pm
Urambi Village Comm. Centre.
Crozier Circuit, Kambah.

NORTHERN & WESTERN SUBURBS COMPUTER USERS GROUP

Cont: David Coupe, Tel: (03) 370 9590
Meet: CPM Data Systems, 284 Union Rd.
Moonee Ponds. Alt. Thurs. 7pm.

PENINSULA COMPUTER GROUP

Cont: George Thompson, 3 Patterson St.
Bonbeach, 3196. Tel: 772 2674.
Meet: 2nd Tues. monthly, Chisholm College,
Frankston.

NEW SOUTH WALES

BLUE MOUNTAINS OF N.S.W.

Cont: Greg Baulman
Tel: Home (047) 51 3221
Meet: 1st Fri. monthly, 7.30pm
Springwood Civic Centre.

TRS-80 SYDNEY EASTERN SUBURBS USERS GROUP
MAPPER CP/M USERS GROUP

Cont: Dan Lawrence
 G.P.O. Box 2551, Sydney, 2001.

WOLLONGONG GROUP

Cont: Paul Janson
 P.O. Box 397, Dapto, 2630.

COMPUTERTOWN CAMDEN

Cont: Keith Stewart,
 P.O. Box 47, Camden, 2570.

NEWCASTLE MICRO USERS GROUP

Cont: Dennis Jackson,
 Tel: (049) 63 1910
 Meet: Last Wed. monthly 7.30pm, Hall, Cnr.
 Fowler and Ogen Sts., Hamilton Sth.

PEACH USERS GROUP

Cont: 120 Lawson St. Redfern, N.S.W. 2016

SYDNEY PEACH USERS GROUP

Cont: 261 Northumberland St.
 Liverpool, N.S.W. 2170.

VICTORIA

BALLARAT COMPUTER USERS GROUP

Cont: John Preston, Tel: (053)31 4363
 Meet: 1st Wed. monthly at 7.30p.m.
 Various venues - refer above.

EASTERN SUBURBS USERS GROUP

Cont: John Fletcher
 Tel: Home (03) 737 9544
 Bus (03) 89 0677 (9-4)
 Meet: 4th Wed. monthly, 7.00pm. Kingswood
 College, 355 Station St. Box Hill.

GEELONG COMPUTER CLUB

Cont: P.O. Box 6, Geelong, 3220.
 Meet: 2nd Thurs. monthly, Tybar Engineering
 Hampton St. Newton.

MICROCOMPUTER CLUB OF MELBOURNE

Cont: MICOM, P.O. Box 60, Canterbury, 3126
 Meet: 3rd Sat. monthly, 2.00pm. Burwood
 State College, Burwood Hwy.

** UNITED KINGDOM **

COMPUTERTOWN NORTH-EAST

Cont: c/o 2 Claremont Pl. Gateshead, Co.
 Tyne & Wear NE8 1TL.
 Tel: 0632-770036/643417/679119/559167.

COMPUTERTOWN UNITED KINGDOM

Cont: Dave Tebbutt, c/o 14 Rathbone Pl.
 London W1P 1DE

INTERNATIONAL TRS-80 LEVEL 1 USER GROUP

Cont: Mr. N. Rushton, 123 Roughwood Dr.
 Northwood, Kirley, Merseyside, L33 9U9.

NATIONAL TRS-80 USERS GROUP

Cont: Brian Pain, 40A High St. Stoney
 Stratford, Milton Keynes.

NEWCASTLE PERSONAL COMPUTING SOCIETY

Cont: John Stephen Bone - 0632 770036

NORTH-EAST TRS-80 USERS GROUP

Cont: Barry Dunn, 8 Ethick Tce. North
 Craighead, Stanley, Co. Durham DH9 6BE.
 Tel: 0207 30184.

QUEENSLAND

TRS-80/SYSTEM 80 COMPUTER GROUP

Cont: Lance J. Lawes, 21 Rodney St. Lindum
 Tel: (H)(07)396 2998 (W)(07)268 6811
 Meet: 1st Sun. monthly 1:30pm at Lindum
 Progress Hall, Lindum Rd. Lindum, 4178.

COMPUTER OWNERS GROUP

Cont: Betty Adcock, Tel: (07) 263 4268

TOWNSVILLE GROUP

Cont: Townsville Amateur Radio Club
 Meet: 2nd Tues. monthly, State Energy Serv.
 HQ., Green Street, West End.

SOUTH AUSTRALIA

ADELAIDE MICRO USER GROUP

Cont: Rod Stevenson, 36 Sturt St. Adelaide.
 Tel: 51 5241 between 9-4.

NORTHERN TERRITORY

DARWIN GROUP

Cont: Tony Domigan,
 P.O. Box 39086, Winnellie, 5789.

NT 80 MICRO COMPUTER USERS GROUP

Cont: Mr. Harmon Venner, President,
 96 Freshwater Rd. Jingili, Darwin, N.T.

WESTERN AUSTRALIA

CPU - THE CLUB FOR PEACH USERS

Cont: Brendon Butcher, Tel: (09) 367 5880

PERTH '80 USERS GROUP

Cont: C. Powell (09) 457 6849
 Meet: 1st Tues. monthly, 7.30pm. Comm. Rec.
 Hall, MacDonald St. Yokine.

TASMANIA

DEVONPORT COMPUTER INTEREST GROUP

Cont: John Stevenson, Tel: (004) 92 3237

NORTH-WEST TASMANIAN USER GROUP

Cont: Rod McLeod, Tel: Home (004) 372064
 Bus. (004) 301611

NORTH WEST TRS-80 USERS GROUP

Cont: The Secretary,
 40 Cowlees, West Houghton
 Bolton, BL5 3EG.

TANDY OWNERS PROGRAM & INFORMATION CO-OP

Cont: Derek Higbee, 12 Shelley Close, Ashley
 Heath, Ringwood.
 Tel: Ringwood 6720.

TRS-80 EDUCATIONAL USERS GROUP

Cont: Dave Futch - Head Teacher,
 Beaconsfield First & Middle School,
 Beaconsfield Rd, Southall,
 Middlesex.

WEST HERTS 80 USERS GROUP

Cont: Terry Bradbury, 20 Spruce Way,
 St. Albans,
 Herts.
 Tel: Park St. 73663.

** NEW ZEALAND **

AUCKLAND

Cont: Ron Feasy, Bus. 799366 Home: 469455
 Meet: 1st Tues. monthly, 7.30pm
 N.Z. Solenoid Co. Ltd. 28 Kalmia St.
 Ellerslie, Auckland.

WELLINGTONWELLINGTON SYSTEM 80 USERS GROUP

Cont: Murray Trickett, Tel: 724-351 (W)
 662-747 (H)
 Meet: 2nd and last Tues. monthly.

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SOFTWARE

***** STAR TREK (Colour) by R.O. Edwards *****

This game of Star Trek has comprehensive instructions built into the game which need not be repeated here. The Colour Computer version has a couple of modifications in it that were necessary due to the small screen size. All of the computer responses to your actions will scroll across the screen in a small window; this response will only be replaced when you take any action that requires a new response. Also, the Galaxy Map, (being about three times the width of the normal screen), can only be viewed a portion at a time. Think of your screen as a window and using the arrow keys, move this window left and right to view the required portion of the Galaxy map page. One further note for the Colour Computer version: the program has a POKE that gives text on an orange background. If the program terminates by its intended means, the original value at the POKE address will be restored. If you should 'BREAK' the game, then it will be necessary to perform the following:

POKE 359,126

This will restore the green background; failure to do this could cause the computer to appear to lock up; if it does, you can still blindly type the above (though nothing will appear on the screen until you press ENTER). This will restore the screen to normal.

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***** THE ARISTOCRAT (Colour) by R. Dyball *****

The Aristocrat is a poker machine for the Colour Computer and the Hitachi Peach. In each version you start with a credit of \$10; to start the game you press the space bar. To start a new game you press ENTER/RETURN. The Colour Computer version has coloured blocks instead of letter symbols; the colours correspond to the symbols in the following manner:

YELLOW = 10 (TENS)
 BUFF = J (JACKS)
 BLUE = Q (QUEENS)
 RED = K (KINGS)
 BLACK = A (ACES)

The payouts for each version are the same. The Colour Computer version has sounds for the reels turning, the handle being pulled down and the coins dropping into the tray. The Hitachi version has a simple tone that is sounded when the reels stop spinning. In each version play continues until you run out of money.

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***** URANIUM CORE - LII/16K by D.S. Stevens and B. Thomas *****

NOTE: This program is strictly for Level II.

Uranium core is set sometime in the future. Earth is rapidly running out of natural resources. Your mission is to retrieve the uranium cores found in the second universe and return them to our universe via the universe interface. Your mission will be deemed unsuccessful if no cores are present in the pod bay.

Your ship is the new 'Vectored Probability Shift Pod' and it uses V.P. shifts to move. To slow forward movement, you must select reverse. Likewise with up: select down to slow movement (and vice-versa).

You have only one life, so be careful! Watch out for unstable neutrino webs and black holes!

PROGRAM BREAKDOWN.

Lines 10-120 Program title and authors, system type input.
 140-150 Print @ position conversion.
 160 Move player.
 490 Unsuccessful mission.
 500 Successful mission. Calculate new fuel, reset velocity, increment level.
 550 Explosion routine. Print "Game Over".
 580 Read machine language data and create strings, define variables.
 700 Start game, draw screen.
 780 Calculate new core position, set black hole if necessary.
 850 High scores.
 880 Print high score congratulatory message, wait for player to input name or initials. Calculate player's position in high score array.
 890 Print high score table.
 1000 Print title page and await input (for instructions or game).
 1230 Print instruction page and await input (to start game). (No input, so go to title page again).

The program uses SET (X,Y) co-ordinates and these are converted to give ?@ position. There are three machine language subroutines used by this program. The explosion routine is memory dependent so this routine may not be put elsewhere, but the sound and inverse screen routines are relocatable code, so you may move them if they conflict with any routines you like to have in your computer. Don't forget to rest the memory size!

- 1) EXPLOSION ROUTINE resides from 32305 to 32651
- 2) SOUND ROUTINE resides from 32688 to 32716
- 3) INVERSE ROUTINE resides from 32717 to 32767

STRING DATA

LB\$ = <u>L</u> ong <u>B</u> lank	WB\$ = <u>W</u> eb
UT\$ = <u>U</u> ranium <u>C</u> ore <u>T</u> itle	P\$ = <u>P</u> layer's <u>S</u> hip
VB\$ = <u>V</u> ertical <u>B</u> order	UC\$ = <u>U</u> ranium <u>C</u> ore
HB\$ = <u>H</u> orizontal <u>B</u> order	BH\$ = <u>B</u> lack <u>H</u> ole
TB\$ = <u>T</u> op <u>B</u> order	B\$ = <u>B</u> lank

VARIABLE DATA

C1 = Arrow key location	SC = Score
C2 = and keys location	PX = Player's X position
C3 = Start of screen memory	PY = Player's Y position
C4 & C5 = USR entry points	PP = Print position (calculated from PX and PY)
I = Inverse constant for C4	XV = X Velocity
M = Sound constant for C4	YV = Y Velocity
EX = Explosion constant for C4	FP = Fuel Pointer
LV = Level	GF = Grapple Flag.

If you have any queries about this program, please don't hesitate to contact me. HAVE FUN!!

- 000000000 -

***** SINGLE KEY MENU - MODEL 3 DISK by S.J. Turtle *****

NOTE: This program is strictly for Model 3 Disk users and requires NEWDOS 80.

This is one for those people who get callouses on their fingertips from typing in all those DOS commands so necessary to get anything out of their machines.

When correctly set up, this program displays a list of up to 16 of your most commonly used programs and/or commands with a pointer which can be moved up or down to point to any one.

All the user needs to do is to move the pointer, using the up or down arrow key to the required command and press (ENTER) ... the command is then executed as if it had been typed in at NEWDOS 80 READY. Pressing the (CLEAR) key restores the usual NEWDOS 80 READY command mode, which is also the default after any DOS command has been executed.

The correct setting up of this routine requires that you are familiar with, and have available

an editor/assembler and SUPERZAP as some minor changes must be made to two system programs, namely SYS0/SYS and SYS1/SYS.

The first thing to do is get MENU into your machine, either by typing in the source code through an editor/assembler or by loading it from a MICRO-80 disk or cassette. I would recommend typing in the source code and saving it as it is necessary to use the editor/assembler to write your own commands into the menu ...more about that later. Save the source and assembled object code to disk ...it is necessary to have object module on the system disk.

***** BEFORE GOING ANY FURTHER make a backup copy of your system disk and use it to make the system program changes on, as any errors will render it useless until they can be repaired using Superzap. *****

Next enter SUPERZAP.....

- 1) Type DFS (ENTER)
- 2) Respond to FILESPEC? with SYS0/SYS
- 3) Respond to RELATIVE SECTOR #? with 8
- 4) Type MOD92 (ENTER)
- 5) Change 01 00 B2 4B to 01 FA B2 4B and save the change to disk
- 6) Move to the next sector...FRS 9
- 7) Type MOD8D (ENTER)
- 8) Change 00 00 00 00 00 00 01 00 B0 4C 00 to 01 05 00 F2 C3 40 00 01 FF B1 4C and save these changes to disk.
- 9) Press X to return to SUPERZAP menu.
- 10)Exit SUPERZAP and REBOOT THE DISK.

Now re-enter SUPERZAP and...

- 1) using the method in 1 to 3 above go to sector 1 of SYS1/SYS.
- 2) Type MOD2A (ENTER)
- 3) Change C3 40 00 to C3 00 F2 and save to disk.

You can now exit SUPERZAP...

If all is well you shouldn't notice anything! However, if you have made an error there are three most likely symptoms - first the screen will go blank except for NO SYS in the top left corner (you probably messed up number 5) or SYSTEM PROGRAM NOT FOUND repeatedly after a successful boot or constant reboots (you probably forgot number 8).

When NEWDOS 80 READY appears type MENU or LOAD MENU/CMD and press (ENTER) then when NEWDOS 80 READY returns press (ENTER) again and the menu should appear.

If you have made any mistakes with zapping the system programs, you probably won't have made it this far, so any faults from now on are most likely in MENU/CMD itself.

You will, of course, want to change your menu to suit yourself. This is best done using the editor/assembler - you will find in the source code all the commands in DEFM statements ORIGINATED at F2FOH - by changing these to what you want and reassembling the program you can include any DOS command string that is permitted under NEWDOS 80, up to 40 characters long which is ample for most, if not all, needs.

To change the program it is only necessary to alter the MENU/CMD program. You never need to change the system programs once they have been set up, and the disk will still operate quite happily without the menu resident, provided you never overwrite the three byte jump at F200 ...for this reason I recommend using an AUTO chain routine that sets HIMEM to F1FEH and automatically loads MENU/CMD.

HOW IT WORKS

SYS1/SYS is the overlay module which is used to 'interrogate' the DOS commands and act upon them. It usually jumps to a ROM line input routine at 0040H from 4E24H. SYS1/SYS is only in the system when a DOS command is entered. In order, therefore, to permanently change this vector to the MENU routine, it is necessary to change SYS1/SYS itself - that is, the second of the two zaps - we alter the jump to 0040H (C3 40 00) to F200H, the entry point of MENU (C3 00 F2). Now we are left with a problem. If we try to boot the disk with that change only control will jump unconditionally to F200H every time, whether anything is there or not, hence constant reboots.

To overcome this situation we make a change to SYS0/SYS which is the module loaded first to set up the DOS vectors and the entire DOS environment. This change consists of placing three bytes at F200H to branch control back to 0040H until we get MENU Loaded - this is the first of the zaps.

A quick note here about disk file formats to enlighten the now totally confused novices - each block of code on a disk file contains a header of 4 bytes to tell the computer...

- 1) where to put it, and

2) how many bytes to put.

i.e. in our zap 01 05 00 F2 C3 40 00 means....

01 - this is a new section

05 - there are 5hex bytes including the two address bytes (the maximum is 00hex which equals 256)

00 F2 - where to put it...the address in LSB/MSB format, i.e. F200H

C3 40 00 - the code to be put, i.e. JP 0040H

The other four bytes 01 FF B1 4C were needed to load the next block, one byte of which we borrowed for our zap.

For anyone who would like to know more about disk files etc., I would recommend 'TRS-80 DISK AND OTHER MYSTERIES' by H.C. Pennington, which describes all types of disk files in great, yet easy to understand detail. (It is available from MICRO-80 for \$27.00 and well worth every cent).

The only other zap to SYS0/SYS is to allow for the 6 bytes we borrowed from the last block.

The operation of MENU/CMD itself is fairly straight-forward and I won't discuss it in detail. The program listing documentation covers most of it. Basically the DOS routine at 4E24H jumps to F200H, the entry point for MENU which tests for a key input. If the key is anything other than (ENTER) it saves it and jumps to ROM at 05E3H to get the rest of the command and then continues as if MENU was not resident. If the key is (ENTER) it clears the screen, writes the menu and waits for up or down arrows, (ENTER) or (CLEAR). The arrows move the pointer in the appropriate direction, the (CLEAR) key clears the screen and returns control to the DOS routine by jumping to 0040H, the original branch in the unaltered DOS, whereas the (ENTER) key causes MENU to load the command to which the pointer is pointing into the input buffer at 4225H and then jumps back to DOS at 497BH, where it usually would after getting a command from the keyboard. DOS then continues as if the command had been typed in normally until it again arrives at 4E24H where the cycle starts again.

When in the menu mode it is possible to enter the usual command mode simply by pressing (CLEAR). After each command is completed the system is in this command mode. To enter menu mode simply press (ENTER) before any other key.

To change your menu, load the source code into your editor/assembler and alter the DEFB statements at the bottom of the listing. Always place a DEFB OFFH after the last DEFB 00 byte to mark the last line of the menu, whether you have 16 entries or not. This is to stop the pointer at your last one and save it trying to point past the end of the screen.

- 0000000000 -

***** DEFUSR - LII/4K by Roger Bowler *****

NOTE: This program is strictly for Level II only.

This article describes an extension to Level II BASIC which should be of interest to anyone who makes USR calls from BASIC but particularly to those with a future move to Disk BASIC in mind.

If you ever upgrade your tape-based TRS-80 to a disk system, you will be pleased to find that Disk BASIC is generally "upward compatible" with Level II BASIC - that is to say, any program written according to the rules of Level II BASIC will normally run unchanged under Disk BASIC. This is very useful, because it means that you won't have to make any alterations to your existing programs to make them work on a disk-based TRS-80 system.

There is, however, one annoying exception to this rule, and it affects programs which call machine-code ("USR") subroutines. Level II BASIC and Disk BASIC use different methods for defining the entry address of a machine-code routine. Under Level II BASIC, you have to break the USR routine's address into its least-significant and most-significant bytes, and POKE these values into locations 16526 and 16527 (decimal) respectively, whereas Disk BASIC provides you with the somewhat more elegant DEFUSR statement.

The following example illustrates the two methods of defining the entry address of a USR routine starting at address 7D00 (32000 decimal).

Level II BASIC.....POKE 16526,0: POKE 16527,125

Disk BASIC.....DEFUSR=32000

What this means is that before you can run your Level II programs under Disk BASIC you have to go through them and convert all the POKE 16526 etc. lines into DEFUSR= statements. If you forget to do this, then not only will the program not work, it is quite likely that the POKE's will cause internal errors in the interpreter.

The ideal solution to this problem would be to provide Level II BASIC with the capability to handle the DEFUSR statement. Then you could write all your programs using DEFUSR, in the knowledge that they will work equally well under either BASIC. In fact, this turns out to be simpler than it sounds; it can be done by adding as little as 16 bytes of machine code to the Level II interpreter.

The first program listing shows the assembly source of the code necessary to interpret DEFUSR statements. (If you are not interested in how it works, you can skip the rest of this paragraph, which gives a brief outline of the routine's internal logic). The Level II interpreter takes a call to location 4158H whenever a statement beginning with DEF is encountered in a BASIC program. Normally this location contains a jump to a routine which issues the ?L3 ERROR message, but we shall overlay it with a jump into our routine instead. When the call is made, the HL register points to the location within the BASIC program which follows the word DEF. Our routine first checks that the next two words in the program are USR and = (?SN ERROR is issued if not), then it evaluates the expression following the =. The integer value of this expression is stored at locations 408E/FH (decimal 16526/7), thus defining the USR entry point. Finally, a return is made to the Level II interpreter with HL pointing to the end of the statement. Most of the processing is done by ROM calls which are more fully described in MICRO-80's LEVEL II ROM REFERENCE MANUAL. It is the power of these ROM calls which makes the DEFUSR routine so compact.

To implement DEFUSR, all you need to do is to poke the 16 byte program somewhere untouched by Level II (I suggest 4040-404FH which are used by Disk BASIC for storing the date and time), and place a jump instruction to it at 415BH. The BASIC program shown in the second program listing will do this for you. Lines 20 to 50 store the machine code in low RAM locations 4040-404FH and line 60 alters the last two bytes of the JP instruction at 415BH to jump to 4040H. Run this program once, and the computer will remain set up to accept programs containing DEFUSR statements (although you will have to rerun the program each time you power on the computer).

The third program listing is included as a demonstration to allow you to try out DEFUSR. All it consists of is the machine code from the 'white-out' program (given as a sample USR routine in section 8 of the TRS-80 Level II BASIC Manual) but the POKE 16526 etc. line has been replaced by a DEFUSR= statement. To use this program, power up the computer with a MEMORY SIZE of 31999, run program 2 to enable DEFUSR, then run program 3. The result is not particularly exciting but no doubt you will have plenty of programs of your own which will benefit from DEFUSR in a more spectacular way.

- 0000000000 -

***** COMPOUND MULTIPLICATION AND LONG DIVISION - LI/4K *****

by C. Stobert

This program was developed to generate problems for practice in long division and compound multiplication using conventional layout and procedure.

The introduction is sketchy as only 20 bytes of memory remain. No short cuts have been taken with punctuation so some extra memory may be found this way, though I prefer to "stay with the book".

The program selects numbers and presents them in calculation format and the answers are entered in turn as per conventional procedure.

Each sequence consists of ten separate problems and any treated incorrectly are repeated. The "mark" calculation is accurate for reasonably few errors as the counters calculate only the number of "turns" and "total correct".

Lines 5-120 Presents nominal introduction and selects type of problem to be processed.

200-270 Presents varying approvals if solution is correct.

280-350 Presents varying personal introductions to break the monotony (not as grand as L II with sound but LI-4K does have its limitations).

400-460 Selects the operating numbers for multiplication problems and breaks them into their component units, tens, etc. for placement in the operating format.

470-520 Places the numbers in the screen format and completes the detail with appropriate underlinings and operating sign.

560-640 Places the input prompt at the appropriate operating place in the format and then after each input replaces numbers removed by the scroll.

The program loops until all four input lines have been completed. The last input includes the units, tens, etc. components of the attempted result.

650-660 Accepts input of $\times 10^3$ and $\times 10^4$ components as appropriate.

670-680 Calculates result of input and compares with correct result.

690-720 Assigns program to problem repeat, new problem or conclusion as appropriate.

800-840 Conclusion sequence.
 900-940 Data lines for location of format layout and 1st - 4th input lines respectively.
 950-990 Subroutine to replace inputs removed by scrolling.
 1300-1340 Subroutine for input of answer sequence for long division problems.
 1400 Removes multiplication data locations to allow access to Data for long division operations.
 1410-1465 Selects divisor and dividend and breaks them into component units, tens, etc.
 1470-1590 Places working numbers in location on the operating format.
 1600-1650 Completes format with appropriate separating lines.
 1680 Inputs first portion of quotient (hundreds).
 1690 Inputs first entry calculation and remainder.
 1700 Transfers next number down from dividend.
 1720-1780 Sequences input to final remainder calculation proceeding as above.
 1800 Calculates final remainder.
 1840-1850 Calculates answer and compares with the correct result.
 1860-1890 Directs program to new problem etc.
 2000-2060 Data for long division operating locations.

- 0000000000 -

***** STARSHOOT - L1/4K by M.S. Young *****

This program is an L1/4K version of the game as in MICRO-80 July, '81. The object of the game is to get a pattern of stars as shown below from the initial position, by shooting stars. Only stars can be shot. A star is shot by entering the number of its position. When a star is shot the pattern will change, depending on which star is shot.

.	.	.	*	*	*	1	2	3
.	*	.	*	.	*	4	5	6
.	.	.	*	*	*	7	8	9
Start			End			Layout		

The above layouts are on the screen throughout the game for reference.

EXPLANATION OF PROGRAM

The board for the game is stored in an array A(1) - A(9). The value depends on if a star or a dot is in that position (1 or -1 respectively). A "second" array is used to store the print positions A(11) - A(19) for positions 1-9. The actual positions on the screen are READ from the DATA in line 9999.

Lines 1001 - 1009 make the changes for a shot in positions 1-9. The line is selected in line 580 with ON S GOSUB

Lines 2000 - 2050 print the board and determine the position of the game. Variable E is used for the status of the board.

If E = 7 (8 stars and 1 dot) AND the centre position A(5) is a dot, the game is completed (Line 620).

If E = 9 (9 dots no stars). This is also an end of the game, as no stars are left to shoot (Line 600).

Lines 3000 - 3160 print the instructions.

Lines 4000-4060 print the layouts.

The game can be completed in 11 moves, but bad shooting may clear the board and end the game. Good Luck!

The line numbers may look rather odd, but there is a reason for the numbers used.

The main program starts at line 500 and other sections start on lines 1000, 2000, 3000 and 4000.

I find it easier to follow the logic used in a program if the lines are numbered in this way rather than starting at line 10 with an increment of 10.

- 0000000000 -

```

410 PRINT@311,"COMMANDS:";PRINT
@342,"O COURSE ";PRINT@374,"1 P
HASERS ";PRINT@406,"2 PHOTON "
";PRINT@438,"3 SHIELDS ";PRINT@
470,"4 DAMAGE ";PRINT@502,"5 MA
P ";RETURN
420 PRINT@310," 3 ";PRIN
T@339," 4 : 2";PRINT@371,
" * * * ";PRINT@403," 5
---*---1";PRINT@435," * * *
";PRINT@467," 6 : 8 ";:
PRINT@499," 7 ";RETURN
430 GOSUB420:MX=1:SD$=BL$+"SET C
OURSE (1-9)"+BL$:PL=334:GOSUB990
:C=QB:IFC<1THEN390ELSE 1FC>9THEN
430
440 SD$=BL$+"WARP FACTOR (.1 - 1
2)"+BL$:PL=332:GOSUB990:W=QB:IFW
<=0THEN390ELSE IFW>12THEN440
450 IFW>1 AND D(O)<=0THEN SD$=BL
$+"WARP ENGINES DAMAGED, MAX SPE
ED WARP 1"+BL$:FORI=1TO1000:NEXT
:GOTO390
460 CLS:T=1:IF T>TO+T9 THEN104
ELSE FORI=0TO5:D(I)=D(I)+.5:IF
D(I)>5THEN D(I)=5ELSE IF D(I)<5
THEND(I)=D(I)+.5
470 NEXT:IF RND(50)<W THEN D=D-R
ND(1100)-200:SD$=BL$+"*** SPACE
STORM *** "+BL$:IFD>0 THEN SD$=B
L$+"*** SHIELDS HELD ***"+BL$ EL
SER=RND(6)-1:D(R)=D(R)+D/100:SD$
=BL$+D$(R)+" DAMAGED ***"+BL$:D=
0
480 N= INT(W*8):E= INT(E-N*2):IF
E<1THEN1040ELSEQ(S1,S2)=0:X=S1:Y
=S2:GOSUB760:FORI=1TON:S1=S1+X1:
S2=S2+X2
490 IFS1<.5ORS2<.5ORS1>=.5ORS2
>=.5THEN530
500 IFQ(INT(S1+.5),INT(S2+.5))>1
THEN SX$=STR$(S1):SY$=STR$(S2):S
D$=BL$+"ENTERPRISE IS BLOCKED BY
OBJECT AT SECTOR "+SX$+" "+SY$+
BL$:S1=INT(S1-X1+.5):S2=INT(S2-X
2+.5):FORI=1TO1000:NEXT:GOTO520
510 NEXTI:S1= INT(S1+.5):S2= INT
(S2+.5)
520 Q(S1,S2)=1:GOSUB860:GOTO240
530 XO=Q1+W*X1:Q1=FIX(XO):YO=Q2+
W*Y2:Q2=FIX(YO):S1=FIX(X+XO-Q1)
*8+.5):IFS1<1 THENS1=S1+8:Q1=Q1-
1ELSE IFS1>8 THEN S1=S1-8:Q1=Q1+
1

```

```

190 X=G(Q1,Q2)/100:K= INT(X):B=
INT((X-K)*10):S=G(Q1,Q2)- INT(G(
Q1,Q2)/10)*10
200 FORI=1TO8:FORJ=1TO8:Q(I,J)=0
:NEXTJ,I:FORI=1TO3:K(I,3)=0:NEXT
210 Q(S1,S2)=1:IFK>0 THEN FORI=1
TOK:GOSUB940:Q(R1,R2)=2:K(I,1)=R
1:K(I,2)=R2:K(I,3)=200:NEXTI
220 IFB>0THENGOSUB940:Q(R1,R2)=3
230 GOSUB860:IFS>0THEN FORI=1TO5
:GOSUB940:Q(R1,R2)=4:NEXT
240 IFD(2)>0 THEN FORI=Q1-1TOQ1+
1:FORJ=Q2-1TOQ2+1:Z$(I,J)=RIGHT$(
STR$(G(I,J)),3):NEXTJ,I
250 CLS:PRINT@0,"SHORT RANGE SCA
N":FORI=1TO8:PRINT@132," ";:IFD(
1)>0 THEN FORJ=1TO8:PRINT MID$(
"EA0*",Q(I,J)+1,1):NEXTJ
260 ON 1 GOSUB290,300,310,320,33
0,340,350,360:NEXTI
270 PRINTI$;:IFD(1)<=0 THEN SD$=
BL$+"SHORT RANGE SCAN INOPERABLE
"+BL$
280 GOTO390
290 PRINT"STARDATE ";T:SP=416:Q=
Q1-1:GOSUB370:RETURN
300 PRINT"CONDITION "C$:RETURN
310 PRINT USING"QUADRANT #:";Q
1,Q2:Q=Q1:SP=448:GOSUB370:RETURN
320 PRINT USING"SECTOR #:";S
1,S2:RETURN
330 PRINT"ENERGY "E;:E=Q1+1:SP
=480:GOSUB370:RETURN
340 PRINT"TORPEDOES"P:RETURN
350 PRINT"SHIELDS "D:RETURN
360 PRINT"KLINGONS "K9:RETURN
370 IFD(2)>0 THEN PRINT@SP,USIN
G"#####";G(Q,Q2-1),G(Q,Q
2),G(Q,Q2+1);ELSE IFQ=Q1 THEN SD
$=BL$+"LONG RANGE SCAN INOPERAB
LE"+BL$ ELSE PRINT
380 RETURN
390 MX=1:PRINT@384,"LONG RANGE S
CAN";:PRINT@328," ";:PRI
NT@320,"COMMAND?";:GOSUB410:Z$(Q
1,Q2)=RIGHT$(" "+STR$(G(Q1,Q2))
,3)
400 Q$=INKEY$:GOSUB1450:IFQ$=""T
HEN400ELSE A=ASC(Q$)-48:IFA<0 OR
A>5 THEN400ELSE IFA<4 AND A>0 A
ND D(A+2)<=0 THEN SD$=BL$+"**"+D
$(A+2)+" INOPERABLE **"+BL$:GOTO
390ELSE ON A+1GOTO430,570,630,77
0,790,800

```

```

**** STAR TREK ****
COLOUR COMPUTER
10 ' ** STAR TREK **
20 ' ** R.O. EDWARDS **
30 ' ** 31 REDESDALE RD **
40 ' ** IVANHOE 3079 **
50 ' MODIFIED FOR THE COLOR
COMPUTER BY MICRO-80
60 CLEAR3000:RESTORE:CLS:PRINT@2
01,"STAR TREK":GOSUB1380:FORI=1T
O1000:NEXT
70 MX=1:BL$=STRING$(20," ");SD$=
BL$+"* * * * * "+BL$
80 CLS:PRINT@192,"DO YOU WANT IN
STRUCTIONS, (Y,N)?":GOSUB1030:IF
Q$="Y"THEN1110
90 PRINT@224,"NO OF KLINGONS, 1
(LOW)-5(HIGH)";:GOSUB980:N=VAL(I
N$):IFN<10RN>5THEN90ELSE CLS:PRI
NT@229,"CREATING GALAXY":Q=1.8:IN
100 K9=0:B1=0:K1=0:T0=(RND(20)+2
0)*100:T=T0:FORI=1TO8:FORJ=1TO8:
R= RND(500)/Q
110 K=0:IFR<20THEN K=1:K1=K1+1:I
FR<10THEN K=2:IFR<5 THENK=3
120 K9=K9+K:B=0:IF RND(0)>1-N/50
THENB=10:B1=1
130 G(I,J)=K*100+B+RND(9):Z$(I,J
)=" ";NEXTJ,I:K0=K9:IFK1>600RK
1<3THEN100
140 Q1=1:RND(8):Q2=RND(8):IF INT(G
(Q1,Q2)/100)>0THEN140ELSE IFB1<
1 THENI=RND(8):J=RND(8):G(I,J)=G
(I,J)+10
150 CLS:T9=K9*3:S1=RND(8):S2=RND
(8)
160 PRINT@96,"PRESENT STARDATE"
:PRINT"AS COMMANDER OF THE U.S.S
. ENTERPRISE YOUR MISSION IS TO
RID THE GALAXY OF THE DEADLY
KLINGOMENACE, TO DO THIS, YOU M
UST DESTROY THE KLINGON INVAS
ION FORCE OF"K9"BATTLE CRUISE
RS."
170 PRINT"YOU HAVE"t9"SOLAR YEAR
S:PRINT"TO COMPLETE YOUR MISSIO
N (I.E. UNTIL STARDATE"TO
+T9)":GOSUB970
180 FORI=0TO5:READD$(I):D(I)=5:N
EXT:E=3500:D=500:P=10:P$= CHR$(9
5)+" "I$= STRING$(21,45):DA
TAWARP ENGINES,SECTOR SCANNER,DE
EP SPACE SCANNER,PHASER CONTROL,
PHOTON TUBES,SHIELD CONTROL

```

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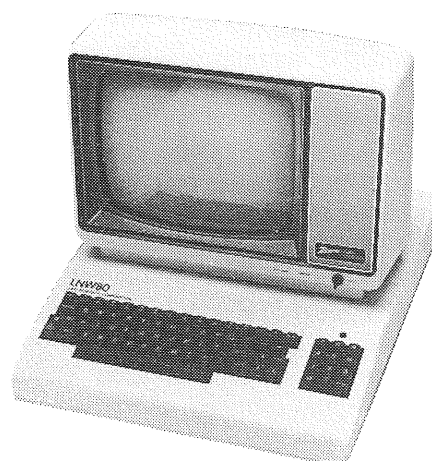
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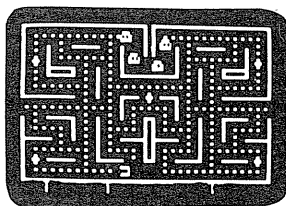
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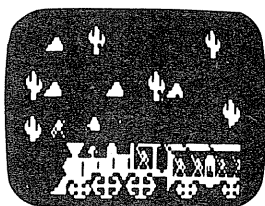
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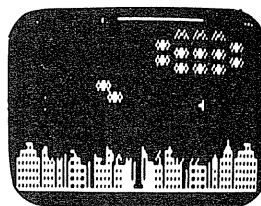
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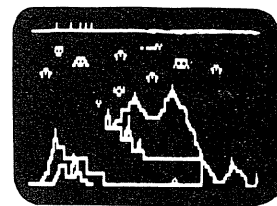
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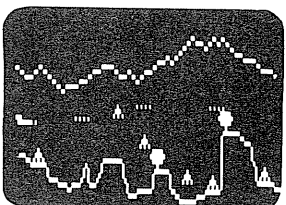
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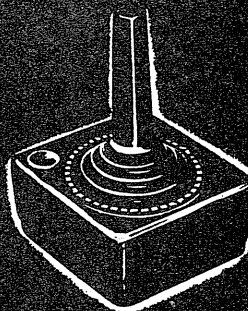
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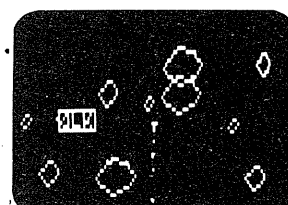
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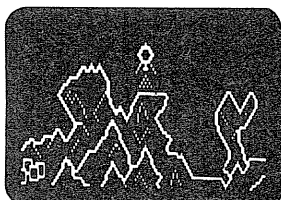
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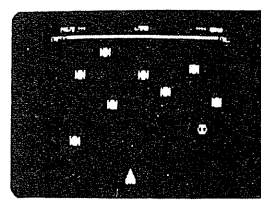
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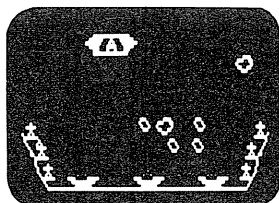
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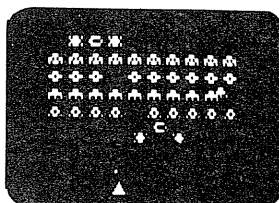
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METEOR MISSION II

As you look down on your view, astronauts cry out for rescue. You must maneuver through the asteroids and meteors. (Can you get back to the space station?) Fire lasers to destroy the asteroids, but watch out, there could be an alien Flagship lurking. Includes sound effects!

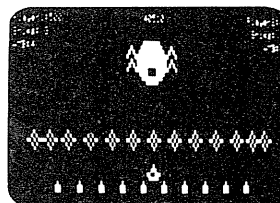
Price: \$26.50



GALAXY INVASION

The sound of the klaxon is calling you! Invaders have been spotted warping toward Earth. You shift right and left as you fire your lasers. A few break formation and fly straight at you! You place your finger on the fire button knowing that this shot must connect! With sound effects!

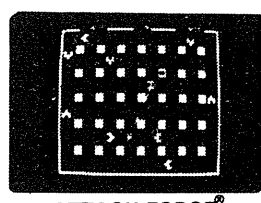
Price: \$26.50



DEFENSE COMMAND

The invaders are back! Alone, you defend the all important nuclear fuel canisters from the repeated attacks of thieving aliens, repeatedly. An alien passes your guard, snatches a canister and flies straight off. Quick! You have one last chance to blast him from the sky! With sound and voice.

Price: \$26.50



ATTACK FORCE®

As your ship appears on the bottom of the maze, eight alien ships appear on the top, all traveling directly at you! You move toward them and fire missiles. But the more aliens you destroy, the faster the remaining ones become. If you get too good you must endure the "Flagship" ... With sound effects!

Price: \$26.50

FOR YOUR ENTERTAINMENT

MICRO-80 now offers you the widest range possible in entertainment software. These programs are supplied on cassette for the Level II/16K TRS-80 Model I/III (except as noted). They are also suitable for the System 80 but sound may not be available unless a hardware modification has been fitted to reverse the roles of recorders #1 and #2. *Order yours now while stocks last!*

DEFENCE PENETRATOR \$20.95

DEFENCE PENETRATOR is based on one of the most popular arcade favourites of all time with smooth graphics and sound effects. With realistic scrolling planetscape it's the best game yet.

DEVIL'S TOWER \$25.95

Aliens move in waves of 5 attackers with their robot scouts attacking you from the mountain, their war machines and their protector ships putting up force fields to protect them. Only your skill and fast reflexes can save the plant.

BATTLE STATION \$21.50

The aim of the game is to defend your space station against the attack of four alien space ships.

MORGOTH \$20.95

Morgoth is a unique action packed adventure allowing you to wander through the enchanted dominion of Morgoth and collect the lost treasures of KAZARD KALLAHAN. But Beware! You must escape before the satanic Morgoth is aroused and seeks ye!

KILLER BEETLES \$21.50

The aim of the game is to dig traps. When a beetle falls in you must fill it in to bury them, before they can catch you.

STAR CRESTA \$20.95

Star Cresta takes you beyond the limits of your computer and into the Cosmic void itself! Beware! Iron clad concentration and lightning reflexes are required to destroy the evil empress.

JUNGLE RAIDERS \$21.50

The aim of the game is to defend your four bases from the marauding Jungle Raiders. Your skill all the Jungle Raiders and they try to hit you with their spears or drag off all four of your bases.

ALIEN TAXI \$28.50

Your goal is to pick up and deliver passengers to an underground resort hotel. There is a fare at each of the 12 taxi stands on the first level and 12 more on the second level.

KILLER GORILLA \$21.50

Four completely different frames. Each one offering a different challenge, makes this one of the most complex and stimulating games ever written for a TRS-80. The game keeps track of the top ten scores along with a six character name for each score.

JUNGLE BOY \$21.50

The ultimate challenge! Are your reflexes fast enough to swing Jungle Boy from vine to vine? Can you swing through the jungle? Can you swim by the alligators? These are just some of the things you will find very challenging in Jungle Boy.

STELLAR WARP \$20.95

Animation with superior fighter craft brings you an even greater challenge. As your computer advances your level, the aliens become more dangerous and the harder it is to stay alive!

HOPPY \$21.50

The aim of the game is to get your frogs across the busy highway without being squashed and then across the river by means of floating logs and turtles.

PANIK \$28.50

Your mission is to rid the galaxy of the Mzors forever. Mzors are half animal and half machine. Their leaders are very difficult to destroy and are capable of creating more warriors at will. Your weapons are your energy pistol, short range transporter pack and your courage.

INSECT FRENZY \$21.50

The aim is to stop the centipede from getting you, all the time keeping an eye out for the giant spider.

ALIEN CRESTA \$21.50

The aim is to defend your ship from numerous attacks from an assortment of aliens. If you get hit three times, it's all over.

DESERT PERIL \$28.50

The Zagons have mined the desert and have put killer satellites, drone bomber balloons, and flying dragons along the whole trail. The future of your planet's race depends on your skill and daring.

RALLY RACER \$20.95

Drive through an action packed maze and try to hit all the flags before Morgan the Mad motorist or Crazy Harry and his killer hoodlums catch you!

NOTE:

As the prices of imported software may vary, these prices are valid for current stock only and prices are subject to change without notice.

Double Your Disk Storage Capacity with the **LNDoubler 5/8**

The LNDoubler is easily installed into your expansion interface and provides support for both 5¼" and 8" disk drives. Completely compatible with all the major Disk Operating Systems, the LNDoubler provides technically advanced, tested and reliable double-density operation with such features as:

- Analog phase lock loop data separation.
- Precision write precompensation.
- High quality PCB with all contacts gold-plated.
- Drives 1-3 may be software selected
- as 5" or 8" drives and a switch is provided for drive 0.
- Supports any mix of 5" or 8" drives, single or double density, single or double sided.

The LNDoubler will increase the formatted storage capacity of **each** 40 track single-sided drive by 80% to over 180Kbytes — for just over half the cost of one disk drive. With an 8 inch double-sided double-density disk drive, you can have over one Megabyte of online storage!

The LNDoubler 5/8 doubler with documentation is available for ...

\$285 plus \$2.00 p&p.

NOTE: A special cable is required for 8" drive operation and 8" double-density operation requires a 3.55 MHz CPU speed-up modification.

now available ...

DOSPLUS 3.5

is the state of the art in Disk Operating Systems for the Model 1 and Model 3 offering an order of magnitude increase in flexibility and performance over its predecessor DOSPLUS 3.4 and yet, is easier to use and more friendly with a Help facility explaining the syntax of DOS commands. The huge manual of over 350 pages describes the system in detail and is sectioned and tagged so that you can find what you want more quickly. Far greater flexibility is offered by the introduction of device drivers that are external to the system and that can be tailored to your needs.

Some of the features offered by DOSPLUS 3.5 are ...

- Single and double density support with density recognition.
- Improved file control facilities and date stamping of files.
- A keyboard driver that offers single key entry.
- An extensive Job Control Language.
- Complete and detailed technical system information.
- Two versions of BASIC, plus a BASIC label facility.
- and much more.

DOSPLUS 3.5 REPRESENTS EXCELLENT VALUE AT \$160

When ordering by MAIL please specify Model 1 or Model 3 and include \$2 for freight

Run your own bulletin board with ...

MICRO-80 BULLETIN BOARD SYSTEM **\$119.00 + \$2.00 p&p**

MICRO-80 (!) is an advanced Bulletin Board System that can be configured to be public allowing anyone to use the system, to be private allowing only authorised access or to allow limited access to some users. As well as providing facilities for uploading/downloading program/data files and messages, MICRO-80 features multi-level system security, user passwords, provision for private messages and permanent user records, and automatically reclaims space when messages are deleted. MICRO-80 is provided with a minimum DOSPLUS operating system kernel.

MICROTERM 1.4 **\$119.00 + \$2.00 p&p**

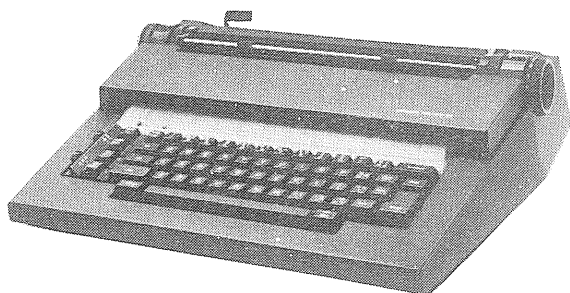
The intelligent microcomputer terminal package that provides many unique features such as Auto Dial and Automatic Transmission Time to send files to a remote site at any time, automatically. Microterm is provided with a minimum DOSPLUS operating system kernel and utility programs to upload and download both program and data files, and allows you to execute DOS commands without exiting the program. The input buffer continues to collect incoming data while going from terminal mode to command mode. The Model 3 version is certified to operate at speeds up to 4800 baud and the Model 1 version up to 600 baud (with no nulls inserted).

(Minimum System Requirements: 48K Model 3, 2 Drives, RS-232-C and Modem)

All prices include Sales Tax and are subject to change without notice. Some items are in limited supply. All equipment carries MICRO-80's Australia-wide warranty covering parts and labour.

Daisy Wheel Printers/Typewriters

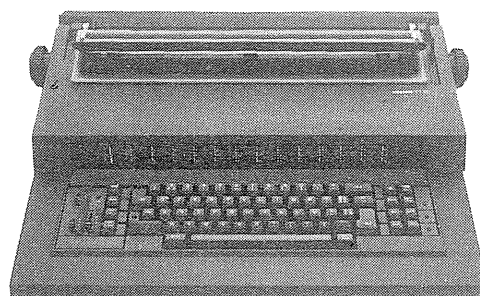
OLIVETTI PRAXIS 35



\$895

plus \$10 road freight anywhere in Australia

OLIVETTI ET-121



\$1500

plus \$20 road freight anywhere in Australia

MICRO-80 has converted these OLIVETTI typewriters to work with the TRS-80, SYSTEM 80 or any other microcomputer with a Centronics parallel port. Now you can have the best of both worlds — an attractive, modern, correcting electronic typewriter which doubles as a correspondence quality Daisy Wheel printer when used with your microcomputer.

The **PRAXIS** is a portable typewriter, designed for private and light commercial use with an average print speed of 6.5 c.p.s.

The **ET-121** is a large typewriter intended for heavier duty and features a print speed of up to 11.5 c.p.s.

Centronics printer cable to suit TRS-80 or SYSTEM 80 \$39

MICRO-80 is an A-Grade Olivetti distributor and has been producing printer conversions for Olivetti daisy wheel typewriters for several years. Write or call for full details.

16K Memory Upgrade Kit

\$30

plus \$2.00 p. & p.

Large volume means we can buy better and can pass the savings on to you. There are our proven, prime, branded 200 nanosecond chips, guaranteed for 12 months.

A pair of DIP shunts is also required to upgrade CPU memory in the TRS-80 — these cost an additional \$4.00. All kits come complete with full, step-by-step instructions which include labelled photographs. No soldering is required. You do not have to be an experienced electronic technician to install them.

Lower Case Modification

\$49

plus \$2.00 p. & p.

The MICRO-80 modification features true below-the-line descenders, a block cursor and symbols for the 4 playing-card suits. Each kit comes with comprehensive fitting instructions and two universal lower-case driver routines on cassette to enable you to display lower case. These routines are self-relocating, self-protecting and will co-reside with other machine language programs (the second includes keyboard-debounce and flashing cursor). Fitting requires soldering inside the computer and should only be carried out by an experienced hobbyist or technician. A fitting service is available in capital cities for only \$20.00 and a list of installers is included with each kit. (Specify TRS-80 Model I or System 80 when ordering.)

All prices include Sales Tax and are correct at time of publication but are subject to changes without notice. All equipment carries MICRO-80's Australia-wide 90-day warranty covering parts and labour.

DISK OPERATING SYSTEMS & DEVELOPMENT SOFTWARE

You can increase your programming productivity, the execution speed and 'user friendliness' of your programs by using an enhanced Disk Operating System (DOS). Together with the other utility software, you can get the most from your disk drives.

DOSPLUS 3.4

\$149.95

(Specify Model I single/double density or Model III)

A powerful DOS that provides many features and comes with a stand alone manual. With a high-degree of compatibility with TRSDOS, DOSPLUS 3.4 is suitable for the first-time or experienced user.

DOSPLUS 3.5

\$160.00

(Specify Model I or Model III)

DOSPLUS 3.5 is a powerful, sophisticated DOS intended for the experienced user. The system can be configured to suit your requirements, provides greatly enhanced features over 3.4 and new features like single-key entry, date-stamping of files, a Help file and more. More user friendly than 3.4, DOSPLUS 3.5 comes with a very extensive stand-alone manual.

ENHBAS

\$52.95

ENHBAS adds over 30 new commands and functions to your BASIC interpreter including high speed SORT, labels in BASIC, RESTORE to any line number, WHILE-WEND for structured programming, SCROLL, LEFT, INVERT, DRAW and PLOT to give you ease of control over graphics, SOUND and PLAY to add realistic sound effects and many more. Makes programming a breeze! Available for Model I or III, disk or cassette — specify which when ordering.

NEWDOS 80 VERSION 2.0

\$185.00

(Specify Model I or Model III)

Newdos 80 suits the experienced user who has already used TRSDOS, understands the manual and is prepared to learn the somewhat complicated syntax of one of the most powerful DOS's available. With the correct hardware, Newdos 80 supports any mix of single- or double-sided, single or double density, 5" or 8" disk drives with track counts up to 96. It provides powerful, flexible file handling in BASIC including variable length records up to 4096 bytes. Definitely not for the beginner.

MASTER DISK DIRECTORY

\$20.95

FIND THE PROGRAM FAST!! PAYS FOR ITSELF BY RELEASING REDUNDANT DISK SPACE!! MASTER DIRECTORY records the directories of all your individual disks onto one directory disk. Then it allows you examine them, find an individual file quickly, list files alphabetically, weed out redundant files, identify disks with free space, list files by extension, etc., etc. This program is invaluable for the serious disk user and will pay for itself many times over. Not fully compatible with NEWDOS 80.

THE FLOPPY DOCTOR/MEMORY DIAGNOSTIC

Model III Disk \$43.50

THE MICRO CLINIC offers two programs designed to thoroughly check out the two most trouble-prone sections of the TRS-80 — the disk system (controller and drives) and the memory arrays. Both programs are written in Z80 machine code and are supplied together on diskette for a minimum 32K, one disk system.

Note: For DOSes, include \$2.00 for freight.

MORE ENTERTAINMENT SOFTWARE

BOSKONE ALERT

\$25.50

You have total control of every aspect of your fighter and must use your laser to destroy 9 Deathstars before the Earth comes into range.

OUTLAND

\$25.95

You must use your skills, reflexes and an array of weapons to defend your colony against the attacks of Xenos Star Raiders and prevent its destruction.

STELLAR WARP

\$20.95

Use your fighter craft to destroy the aliens who become more dangerous as your level advances. Beware of the space mines. In an emergency, activate Stellar Warp.

DOOMSDAY MISSION

\$25.50

You must disarm a number of nuclear missiles left by saboteurs on one of our space stations. Any direct assault on the station could launch those missiles.

CP-80 DOT MATRIX PRINTER

- Features:
- 80 cps bi-directional, logic seeking
 - 40, 71, 80 or 142 characters per line
 - Normal and italic alphanumeric, symbol and semi-graphic characters
 - Unidirectional bit image graphics (8 x 640 or 8 x 1280 dot/line)
 - Tractor and friction feed

EPSON MX80 compatible control codes
FOR A LOW \$599

SPECIAL ANNOUNCEMENT

We are expanding our range of disk drives to include the new

SLIMLINE

MINI-FLOPPY DISK DRIVES

These half-height, 5¼" disk drives represent the state of the art in both technological design and mechanical construction. With the characteristic high quality of manufacture expected in Japanese products, these drives feature ultra-modern electronics, servo-controlled direct drive motors and exceptional physical construction that provide extremely reliable, smooth and quiet operation in both single and double density. Two varieties will be available shortly: 40 track double sided and 80 track double sided.

Please WRITE for further information.

OTHER PRINTERS AVAILABLE:

EPSON RX-80

\$995

Features: 100 cps, 6 character sizes, bit image and graphic modes.

ITOH PROWRITER 8510

\$1150

Features: 120 cps, bit graphics and proportional printing.

EPSON FX-80

\$1399

Features: 160 cps, 6 character sizes, proportional printing, bit graphics.

All prices include Sales Tax and are correct at time of publication but are subject to change without notice.
All equipment carries MICRO-80's Australia-wide 90 day warranty covering parts and labour.
Add \$10 road freight anywhere in Australia.

```

860 IFK>0 THEN C$="RED" ELSE C$="
GREEN": IFE<350 THEN C$="YELLOW"
870 FORI=S1-1TOS1+1:FORJ=S2-1TOS
2+1: IFQ(I,J)<>3 THEN NEXTJ, I:GOT
0890
880 E=3510:P=10:D=510:FORI=0TOS:
D(I)=5:NEXT C$:C$="DOCKED": IFK>0 TH
EN CLS:Q=1:PRINT@448,"STARBASE S
HIELDS PROTECT THE ENTERP
RISE":FORI=1T01000:NEXT:RETURN
890 IFK<1 THEN RETURN ELSE Q=1:CL
S:FORI=1T03:X=K(I,3): IFX<0THEN9
20ELSE GOSUB950:H=H+10:D=D-H:HX$
=STR$(H):SX$=STR$(K(I,1)):SY$=ST
R$(K(I,2)):SD$=BL$+HX$+" UNITS 0
F ENERGY HIT ENTERPRISE FROM KLI
NGON AT SECTOR "+SX$+": "+SY$
900 K(I,3)=INT(X-X/4*RND(O))+.5):
IFD>0 THEN DX$=STR$(D):SD$=SD$+"
SHIELDS REMAINING = "+DX$+BL$:
GOTO930
910 R=RND(6)-1:H1=INT((-D*(RND(O)
)+.5)/50)*10+.5)/10:H=INT(-D-H1)
:D(R)=D(R)-H1:E=E-H:HX$=STR$(H):
EX$=STR$(E):HY$=STR$(H1)
920 SD$="SHIELDS DOWN, YOU LOST
"+HX$+"ENERGY POINTS. "+EX$+" LE
FT & BEEN HIT ON YOUR "+D$(R)+"
FOR "+HY$+" POINTS.":NEXT:GOSUB96
0:IFE<1THEN1040ELSE RETURN
930 K=K-1:K9=K9-1:IFK9<1THEN1050
ELSE Q(K(I,1),K(I,2))=0:G(Q1,Q2)=
G(Q1,Q2)-100:RETURN
940 R1=RND(8):R2=RND(8): IFQ(R1,R
2)<>0THEN940ELSE RETURN
950 H= INT(X/(SQR((K(I,1)-S1)^2+
(K(I,2)-S2)^2))*2)*2+ RND(O)):RET
URN
960 RETURN
970 PRINT@480,"PRESS ANY KEY TO
CONTINUE":
980 IN$=INKEY$: IFIN$=""THEN980EL
SE CLS:RETURN
990 PRINT@PL,P$;Q$;Q$="":Q0=0:Q1$=
INKEY$
1000 Q1$=INKEY$:GOSUB1450: IFQ1$=
""THEN1000ELSE Q=ASC(Q1$): IFQ=BT
HEN990ELSE IFQ<>13THEN IFQ<46 OR
Q>57 OR Q=47THEN1000ELSE Q$=Q$+Q
1$:PRINT@PL,Q$;P$;P$; IF LEN(Q$)<6T
HEN1000
1010 IFQ$<>"" THENQ0=VAL(Q$)ELSE
Q0=0
1020 PRINT@PL-1,Q0 " ";:RETURN
1030 Q$= INKEY$: IFQ$<>"Y"ANDQ$<
">N"THEN1030ELSE RETURN

```

```

700 X=X0:Y=Y0: IFQ(X,Y)=2 THEN FO
RI=1TOS: IFX=K(I,1) AND Y=K(I,2)
THEN K(I,3)=0:SD$=BL$+">KLINGON
DESTROYED<<"+BL$:GOSUB930:GOTO7
40ELSE NEXTI
710 IFQ(X,Y)=4 THEN SD$=BL$+"STA
R DESTROYED"+BL$:S=S-1:GOTO730
720 SD$=BL$+"STAR BASE DESTROYED
... CONGRATULATIONS-TWI
T!!":BL$=B=0
730 Q(X,Y)=0:G(Q1,Q2)=K*100+B*10
+5
740 FORI=1T0500:NEXT:Q=0:GOSUB86
0: IFQ=1THEN250ELSE PRINT@114,C$
":PRINT@241,P " ":PRINT@305,K9
": IFD(1)>0 AND PC<>0 THEN PRINT@
PC-1,".":
750 IFD(2)<=0THEN390ELSE PRINT@
308,RIGHT$( " "+ STR$(G(Q1,Q2)),3
):GOTO390
760 X2= COS((C-1)*.785398):X1= -
SIN((C-1)*.785398):RETURN
770 MX=1:SD$=BL$+"ENERGY TO BE D
IVERGED TO SHIELDS?"+BL$:PL=332:
GOSUB990:D1=INT(QQ): IFE<=D1-D OR
D1>500THEN390ELSE E=E-D1:D=D-D1
:PRINT@177,E " ":PRINT@241,D "
";
780 PRINT@352,STRING$(21," "):P
RINT@320,STRING$(21," "):GOTO390
790 CLS:PRINT@0,"DAMAGE REPORT":
PRINT@64,"DEVICE
STATUS":PRINT@96,I$:FORI=0TOS:P
RINT@96+32*I,USING"%
% ##.#":D$(I),D(I):NEXT
:GOSUB970:GOTO240
800 FORI=1T08:L$(I)="" :NEXTI:CLS
:PRINT@0,USING"GALAXY MAP AT QUA
DRANT #:";Q1,Q2:PRINT:GOSUB840:
FORI=1T08:L$(I)=L$(I)+STR$(I)+"
":FORJ=1T08: IFI=Q1 AND (J=Q2 OR
J=Q2+1) THEN L$(I)=L$(I)+CHR$(14
3)ELSE L$(I)=L$(I)+":
810 LL=LEN(Z$(I,J)): IFL<3THENZ$
(I,J)=STRING$(3-L," "+Z$(I,J)
820 L$(I)=L$(I)+" "+Z$(I,J)+" ":
NEXTJ: IFI=Q1 AND Q2=8 THENL$(I)=
L$(I)+CHR$(143)ELSE L$(I)=L$(I)+
":
830 L$(I)=L$(I)+" "+STR$(I):NEXT
I:GOSUB850:GOSUB1390:GOTO240
840 L$(O)="" ":FORI=1T08:L$(O)=L$
(O)+" ":STR$(I):NEXTI:L$(O)=L
$(O)+" ":RETURN
850 L$(9)="" ":FORI=1T08:L$(9)=L$
(9)+" "+STR$(I):NEXTI:L$(9)=L
$(9)+" ":RETURN

```

```

540 S2=FIX(Y+(Y0-Q2)*8+.5): IFS2<
1 THEN S2=S2+8:Q2=Q2-1ELSE IFS2>
8THEN S2=S2-8:Q2=Q2+1
550 Q1= INT(Q1+.5):Q2= INT(Q2+.5
):IFQ1<10RQ2<10RQ1>80RQ2>8THENQ1
=Q1-X1:Q2=Q2-X2:SD$=BL$+"EDGE OF
GALAXY"+BL$:GOTO550
560 GOSUB860:GOTO190
570 IFK<1THEN SD$=BL$+"NO KLINGO
NS IN QUADRANT"+BL$:GOTO390ELSE Q
0$="": IFK>1THEN Q0$="S"
580 SD$=BL$+"PHASERS LOCKED ON K
LINGON"+Q0$+" NO OF UNITS TO FI
RE?"+BL$:MX=1:PL=332:GOSUB990:X=
Q0: IFX<1THEN390ELSE IFE-X<1THEN5
80ELSE E=E-X
590 CLS:X=X/K:FORI=1T03: IFK(I,3)
<1THEN20ELSE GOSUB950:PRINT
600 IFH<K(I,3)/10 THEN SX$=STR$(
K(I,1)):SY$=STR$(K(I,2)):SD$=BL$
+"SENSORS INDICATE NO DAMAGE ON
KLINGON AT SECTOR "+SX$+": "+SY
$+BL$:GOTO620
610 K(I,3)=K(I,3)-H:HX$=STR$(H):
SX$=STR$(K(I,1)):SY$=STR$(K(I,2)
):SZ$=STR$(K(I,3)):SD$=BL$+HX$+"
UNITS OF ENERGY HIT KLINGON AT
SECTOR "+SX$+": "+SY$+" "+SZ$+"
LEFT"+BL$:IFK(I,3)<1 THEN SD$=SD
$+">>KLINGON DESTROYED<<"+BL$:GO
SUB930
620 NEXTI:GOSUB960:GOSUB860:GOTO
240
630 PC=0: IFP<1 THEN SD$=BL$+"BAD
LUCK, YOUR OUT OF TORPEDOES"+BL
$:GOTO390ELSE IFP=1 THEN SD$=BL$
+"** LAST TORPEDO **"+BL$
640 MX=1:GOSUB420:SD$=BL$+"TORPE
DO COURSE (1-9)?"+BL$:PL=332:GOS
UB990:C=QQ: IFC<1THEN390ELSE IFC>
9THEN640
650 GOSUB760:X=S1:Y=S2:P=P-1
660 FORI=1T0300:NEXT: IFPC<>0 AND
D(I)>0 THEN PRINT@PC-32," ":
670 X=X+X1:Y=Y+X2: IFX<.5 OR Y<.5
OR X>8.5 OR Y>8.5 THEN SD$=BL
$+"BAD LUCK YOUR TORPEDO MISSED"
+BL$:GOTO740
680 X0=INT(X+.5):Y0=INT(Y+.5):PC
=(X0+1)*32+(Y0-1)+1: IFD(1)>0 THE
N PRINT@PC-32,CHR$(143):
690 IFQ(X0,Y0)=0THEN660ELSE IFD(
1)>0 THEN PRINT@PC-33,CHR$(134)
"CHR$(137):

```

```

1250 PRINT"GALAXY SCAN (COMMAND
5)";PRINT"THIS COMMAND SH
OWS A CURRENT MAP OF THE KNOWN GA
LAXY. THIS IS UPDATED BY THE
LONG RANGE SCANNERS.";GOSU
B970
1260 PRINT"PHASERS (COMMAND 1)";
:PRINT"ANY PORTION OF THE
ENERGY AVAILABLE CAN BE FIRED,
THE ON BOARD BATTLE COMPUTER DIV
IDED THIS AMOUNT AMONG THE KL
INGON CRUISERS IN THE QUAD
RANT AND"
1270 PRINT"DETERMINES THE VARIOU
S DIRECTIONS OF FIRE";P
RINT"THE EFFECTIVENESS OF A HIT I
S"
1280 PRINT"MAINLY DEPENDANT ON T
HE DISTANCE TO THE CRUISER. EACH
CRUISER STARTS WITH 200 UNITS
OF ENERGY AND CAN FIRE AN AMOUN
T EQUAL TO HOWEVER MUCH IT HAS L
EFT.";GOSUB970
1290 PRINT"PHOTON TORPEDOES (COM
MAND 2)";PRINT
1300 PRINT"THE ENTERPRISE STARTS
WITH 10 PHOTON TORPEDOES. ONE
TORPEDO WILL DESTROY WHATEVER
IT HITS. THE RANGE OF A PHOTON
TORPEDO (LIKE PHASERS) IS LIM
ITED TO"
1310 PRINT"THE CURRENT QUADRANT.
THE COURSE OF A PHOTON TORPEDO I
S SET THE SAME WAY AS THAT OF T
HE ENTERPRISE";GOSUB970
1320 PRINT"DAMAGE CONTROL (COMMA
ND 4)";PRINT
1330 PRINT"THE DAMAGE CONTROL RE
PORT LISTS THE MAIN DEVICES AND
THEIR STATUS OF REPAIR. A NEGATIVE
STATE OF REPAIR INDICATES A DI
SABLED DEVICE. DEVICES CAN B
E DAMAGED"
1340 PRINT"BY A SPACE STORM OR K
LINGONS AND ANY DAMAGED DEVIC
E IS REPAIRED PARTIALLY EV
ERY STARDATE.";GOSUB970
1350 PRINT"SHIELDS (COMMAND 3)";
:PRINT
1360 PRINT"SHIELDS WILL PROTECT
THE ENTERPRISE FROM KLINGON FIR
E. IF THE SHIELDS DROP (TO 0)
THE KLINGON FIRE WILL DAMAGE & DI
SABLE SECTIONS OF THE SHIP."

```

```

1150 PRINT"WARP ENGINES:";PRINT"
WARP FACTOR IS A REAL NUMBER ";P
RINT"BETWEEN 0 & 12 EACH WARP FA
CTOR";PRINT"WILL MOVE THE ENTERP
RISE ONE ";PRINT"QUADRANT. EACH
.125 WARP FACTOR";PRINT"WILL MOV
E THE ENTERPRISE ONE";PRINT"SECT
OR."
1160 PRINT"EG: WARP .125 =
1 SECTOR";PRINT" WARP .5 =
4 SECTORS";PRINT" WARP 1
= 1 QUADRANT";PRINT" WARP 5
= 5 QUADRANTS";GOSUB970
1170 PRINT"FOR EXAMPLE, IF YOU T
RAVEL FROM QUADRANT 1:1, SECTOR
1:1, IN DIRECTION 1 AT WARP 2
YOU WOULD STOP AT QUADRANT 1:2,
SECTOR 1:1 IN THE NEXT STARDATE.
"
1180 PRINT"";PRINTTAB(5)"** NOTE
**";PRINT"EVERY USE OF THE WARP
ENGINES TAKES ONE STARDATE. I
F THE ";PRINT"ENTERPRISE IS BLOC
KED BY ";PRINT"SOMETHING DURING
INTRA-QUADRANT TRAVEL IT WILL ST
OP IN FRONT OF IT (AND WASTE A S
TARDATE)."
1190 GOSUB970;PRINT"SHORT RANGE
SENSORS";PRINT"THE SHORT RANGE
SENSORS OF THE";PRINT"ENTERPRISE
DISPLAY A DETAILED";PRINT"VIEW
OF THE QUADRANT IT IS IN"
1200 PRINT"THE ENTERPRISE LOOKS
LIKE 'E'";PRINT"ON THE SCREEN &
KLINGON BATTLE";PRINT"CRUISERS L
OOK LIKE 'A'";PRINT"STARBASES LO
OK LIKE 'O' AND";PRINT"STARS LOO
K LIKE '*'";GOSUB970
1210 PRINT"LONG RANGE SENSORS:";
PRINT"THE LONG RANGE SENSORS OF
THE ENTERPRISE DISPLAY INFORMA
TION AS TO THE CONTENTS OF THE
NINE CLOSEST QUADRANTS, THE CEN
TRE BEING THE CURRENT QUADRANT
."
1220 PRINT"THE ONES DIGIT REPRES
ENT THE";PRINT"NUMBER OF STARS."
1230 PRINT" TENS STARB
ASES HUNDREDS KLING
ONS."
1240 PRINT"FOR EXAMPLE:";PRINT"2
15 = 2 KLINGONS, 1 STARBASE & 5
STARS. 108 = 1 KLINGON, 0 S
TARBASES AND 8 STARS. 2 = 0 K
LINGONS, 0 STARBASES & 2 STARS";
GOSUB970

```

```

1040 FOR I=1 TO 1000:NEXT:CLS:PRINT
@0,"IT IS STARDATE";PRINT"THE";PRIN
T"ENTERPRISE HAS BEEN DESTROYED
THE FEDERATION WILL BE CONQUER
ED THERE ARE STILL";PRINT"KLINGON";PR
INT"BATTL CRUISERS LEFT ";PRINT
"...YOU ARE DEAD.";GOTO1100
1050 FOR I=1 TO 1000:NEXT:CLS:PRINT
@0,"IT IS STARDATE";PRINT"THE L
AST KLINGON BATTLE CRUISER IN TH
E GALAXY HAS BEEN DESTROYED THE F
EDERATION HAS BEEN SAVED YOU H
AVE BEEN PROMOTED TO ADMIR
AL. YOU DESTROYED";PRINT"KO
1060 PRINT"KLINGONS IN "T-TO"STA
RDATES";F=INT(KO/(T-TO)*1000):D
NF=500+1600-I*1000,1080,1070,1070
1070 PRINT"YOUR RATING IS";PRINT"WHIC
H IS ABSOLUTELY FANTASTIC
I TAKE IT YOU HAVE PLAYED BEFOR
E! THAT IS BETTER THAN ONE KLING
ON PER STARDATE!";GOTO1100
1080 PRINT"NOT BAD, YOUR RATING
IS";PRINT"IT COULD BE BETTER";GOTO
1100
1090 PRINT"THIS IS A PRETTY LOUS
Y SCORE, YOU CAN DO A LOT BETT
ER THAN "F";GOTO1100
1100 PRINT"DO YOU WISH TO A
TTEMPT IT AGAIN, (Y,N)?";GOSUB10
30:IF Q#="Y" THEN GOTO ELSE PRINT"O.K.
SEE YOU.";FOR I=1 TO 1000:NEXT:CLS
:POKE359,126:END
1110 IF=CHR$(34):CLS:PRINT"THE
GALAXY IS DIVIDED INTO 64";PRINT
"QUADRANTS WITH THE FOLLOWING ";
PRINT"COORDINATES:";PRINT" 1
2 3 4 5 6 7 8";FOR I=1 TO 8:PRINT
I;FOR J=1 TO 8
1120 PRINT";CHR$(45);NEXT:PRI
NT";PRINT" 1 2 3 4 5
6 7 8";PRINT"EACH QUADRANT IS SI
MILARLY ";PRINT"DIVIDED INTO 64
SECTORS";GOSUB970
1130 PRINTTAB(5)"***DEVICES***"
:PRINT"COURSE (COMMAND 0)";PRIN
T"ANY REAL NUMBER BETWEEN 1 & 8.
9";PRINT"THE NUMBER INDICATING DI
RECTION STARTING AT THE RIGHT A
ND GOING COUNTER CLOCKWISE:"
1140 PRINT" 3";PRINT"
4 : 2";PRINT" * *";PRIN
T" 5----*---1";PRINT" *
*";PRINT" 6 : 8";PRINT"
7";GOSUB970

```

```

60 BL$=CHR$(128):BX$=STRING$(25,
BL$)+"press"+BL$+"the"+BL$+"spac
e"+BL$+"bar"+BL$+"to"+BL$+"inser
t"+BL$+"a"+BL$+"coin"+BL$+BL$+BL
$+"press"+BL$+"enter"+BL$+"for"+
BL$+"a"+BL$+"new"+BL$+"game"+STR
ING$(25,BL$)
70 PV=1
80 A$="":R=RND(30):S=RND(30):T=R
ND(30)
90 GOSUB690
100 PRINT@128,"":PRINT USING"##
##";PAY:IFWAD=0THEN670ELSE PRIN
T@32,"$":PRINT USING"###.##";WA
D:A$=INKEY$:IFA$=""THEN90ELSE
IFA$=CHR$(13)THEN CLS:GOTO30ELS
EWAD=WAD-.2:PRINT@32,"$":PRINT
USING"###.##";WAD;
110 FORI=1TO14:ONI GOSUB160,160,
160,150,150,150,140,140,140,130,
140,150,160,170
120 NEXTI:GOTO190
130 FORD=1TO40:NEXTD:SOUND125,1:
RETURN
140 PRINT@156,"":PRINT@188,"
":PRINT@220,"":PRINT@252,CH
R$(254)+CHR$(253):PRINT@284,CHR
$(251)+CHR$(247):PRINT@316,CHR$
(255)+"":SOUND150,1:RETURN
150 PRINT@156,"":PRINT@188,"
":PRINT@220,CHR$(254)+CHR$(253
):PRINT@252,CHR$(251)+CHR$(247
):PRINT@284,CHR$(255)+"":SOUND
175,1:RETURN
160 PRINT@156,"":PRINT@188,CH
R$(254)+CHR$(253):PRINT@220,CHR
$(251)+CHR$(247):PRINT@252,CHR$
(255)+"":SOUND200,1:RETURN
170 PRINT@156,CHR$(254)+CHR$(253
):PRINT@188,CHR$(251)+CHR$(247
):PRINT@220,CHR$(255)+"":SOUND
225,1:RETURN
180:REM , DETERMINE APPROX.
HOW MANY TIMES EACH REEL TURNS O
VER SOMETIMES THE REELS W
ILL TIP OVER JUST AFTER THEY STO
P
190 TK=RND(20):PAY=0:KK=RND(25)+
25:S1=(KK+RND(5)-3)*3/5:S2=(KK+R
ND(5)-3)*4/5
200 FOR RS=1TO KK:IF RS>S2 AND T
K=1 THEN240 ELSE IF RS>S2 THEN 2
70 ELSE IF RS>S1 THEN 240 ELSE R
=R-1:IFR<=1 THEN R=30
210:REM , IN 130-140,150-160,17
0-180 PRINT CHARACTERS ON THE RE
ELS
220 RA=R-1:RB=R-2:IFR=1THENRA=30
:RB=29
230 PRINT@172,CHR$(R(1,R)):PRIN
T@140,CHR$(R(1,RA)):PRINT@108,C
HR$(R(1,RB)):SOUND100,1
240 T=T-1:IFT<1THEN T=30
250 TA=T-1:TB=T-2:IFT=1THEN TA=30
:TB=29
260 PRINT@175,CHR$(R(2,T)):PRIN
T@143,CHR$(R(2,TA)):PRINT@111,C
HR$(R(2,TB)):SOUND110,1
270 S=S-1:IFS<1THENS=30
280 SA=S-1:SB=S-2:IFS=1THENSA=30
:SB=29
290 PRINT@178,CHR$(R(3,S)):PRIN
T@146,CHR$(R(3,SA)):PRINT@114,C
HR$(R(3,SB)):SOUND120,1
300 NEXT
310:REM 'CHECK ON PAYOUT, IF LUC
KY, ADD TOGETHER THE 3 CHRS ON R
EELS
320 TR$=CHR$(R(1,RA))+CHR$(R(2,T
A))+CHR$(R(3,SA))
330:REM 'CHECK IF JACKPOT
340 IFTR$=CHR$(128)+CHR$(128)+CH
R$(128)THEN PRINT@453,"JACKPOT -
$50 - ":FORD=1TO100:NEXT:
PAY=50:GOTO480
350 IF LEFT$(TR$,2)=CHR$(128)+CH
R$(128)THEN PRINT@453,"JACKPOT -
$20 - ":FORD=1TO100:NEXT:
PAY=20:GOTO480
360:REM 'CHECK IF RUN
370 IFTR$=CHR$(159)+CHR$(207)+CH
R$(175)ORTR$=CHR$(175)+CHR$(191)
+CHR$(128)ORTR$=CHR$(207)+CHR$(1
75)+CHR$(191)THENPAY=4:GOTO470
380 X$=CHR$(R(1,RA)):Y$=CHR$(R(2
,TA)):Z$=CHR$(R(3,SA))
390:REM , CHECK IF A SMALLER
PAYOUT
400 IFX$=Y$ANDY$=Z$ANDZ$=CHR$(15
9)THENPAY=2:GOTO470
410 IFX$=Y$ANDX$=CHR$(159)THENPA
Y=1:GOTO470
420 IFX$=Y$ANDY$=Z$ANDZ$=CHR$(20
7)THENPAY=3:GOTO470
430 IFX$=Y$ANDY$=CHR$(207)THENPA
Y=2:GOTO470
440 IFX$=CHR$(159)THENPAY=.2:GOT
O470
450 IFX$=Y$ANDY$=Z$THENPAY=6:GOT
O470ELSE100::REM 'GOTO 40 IF NO
PAYOUT
460:REM ADJUST WAD

```

```

1370 PRINT"THE ENTERPRISE'S SHIE
LDS START AT 500 UNITS (OF ENER
GY), WHICH IS THE MAXIMUM.":GOSU
B970:CLS:GOTO90
1380 POKE359,57:SCREEN0,1:RETURN
1390 P=1
1400 PRINT@448,"PRESS ARROW KEYS
TO MOVE THE MAPPRESS ENTER TO R
ETURN":FORD=0TO9:PRINT@32*X+32,
MID$(L$(X),P,32):NEXTX
1410 IN$=INKEY$:IFIN$=""THEN1410
ELSE IN=ASC(IN$):IF IN=8THENP=P
-1:IFP=0THEN P=1
1420 IFIN=9THENP=P+1:IFP>24THENP
=P-1
1430 IFIN=13THENRETURN
1440 GOTO1400
1450 PRINT@352,MID$(SD$,MX,20)::
MX=MX+1:IFMX=LEN(SD$)-20THENMX=1
ELSEIFMX=255THENMX=1
1460 RETURN

```

**** ARISTOCRAT ****

COLOUR COMPUTER

POKER MACHINE

20 REM (C) BOB DYBALL 16/02/81

MODIFIED FOR THE COLOR
COMPUTER BY MICRO-80

```

30 CLEAR1000:CLS:WAD=10:DIMR(3,3
0),RP(3):RP(1)=213:RP(2)=222:RP(
3)=230:CP$(1)="0":CP$(2)="0":CP$
(3)="0":CP$(4)="/" :CP$(5)="-":CP
$(6)="-":CP$(7)=CHR$(92):CP$(8)
="0":CP$(9)="0":CP$(10)="0"
40:REM 'DRAW THE POKER MACHINE
THEN READ IN THE DATA FOR THE RE
ELS
50 CLS:GOSUB540:FORD=1TO3:FORDP=1
TO30:READ(R,P):NEXTP:NEXTR

```



```

80 LOCATE19,10:PRINT"NO OF KLINGONS, (1
(Low)-5(HIGH) )";GOSUB1320:IFN<10RN>5TH
ENBOLSECLS:LOCATE18,10:PRINT"CREATING G
ALAXY":G=1.8^N
90 K9=0:B1=0:K1=0:MAX=20:T0=FNR(RA):T0=T
0+20:T0=T0*100:T=T0:FORI=1T08:FORJ=1T08:
MAX=500:R=FNR(RA):R=R/Q
100 K=0:IFR<20THENK=1:K1=K+1:IFR<10THEN
K=2:IFR<5THENK=3
110 K9=K9+K:B=0:IFRND(1)>1-N/50THENB=10:
B1=1
120 MAX=9:R9=FNR(RA):G(I,J)=K*100+B+R9:Z
$(I,J)="":NEXTJ,I:K0=K9:IFK1>600RK1<3
THEN90
130 MAX=8:Q1=FNR(RA):Q2=FNR(RA):IFINT(G(
Q1,Q2)/100)>0THEN130ELSEIFB1<>1THEN MAX=
8:I=FNR(RA):J=FNR(RA):G(I,J)=G(I,J)+10
140 CLS:T9=K9*3:MAX=8:S1=FNR(RA):S2=FNR(
RA):LOCATE7,6:PRINT"PRESENT STARDATE"TA
S COMMANDER OF THE U.S.S. ENTERPRISE YOU
R MISSION IS TO RID THE GALAXY OF THE D
EADLY KLINGON MENACE, TO DO THIS, YOU MU
ST DESTROY THE KLINGON INVASION FORCE"
150 PRINT"OF ";K9;" BATTLE CRUISERS":PRI
NT:PRINT"YOU HAVE"t9"SOLAR YEARS TO COMP
LETE YOUR MISSION(I.E. UNTIL STARDATE"TO
+T9)":GOSUB960
160 FORI=0T05:READ$(I):D(I)=5:NEXTI:E=35
00:D=500:P=10:P#=CHR$(95)+"":I$=STR
ING$(21,45):DATAWARP ENGINES,SECTOR SCAN
NER,DEEP SPACE SCANNER,PHASER CONTROL,PH
OTON TUBES,SHIELD CONTROL
170 X=G(Q1,Q2)/100:K=INT(X):B=INT((X-K)*
10):S=G(Q1,Q2)-INT(G(Q1,Q2)/10)*10
180 FORI=1T08:FORJ=1T08:Q(I,J)=0:NEXTJ,I
:FORI=1T03:K(I,3)=0:NEXT
190 Q(S1,S2)=1:IFK>0THENFORI=1TOK:GOSUB9
40:Q(R1,R2)=2:K(I,1)=R1:K(I,2)=R2:K(I,3)
=200:NEXT
200 IFB>0THENGOSUB940:Q(R1,R2)=3
210 GOSUB860:IFS>0THENFORI=1TOS:GOSUB940
:Q(R1,R2)=4:NEXT
220 IFD(2)>0THENFORI=Q1-1T0Q1+1:FORJ=Q2-
1T0Q2+1:Z$(I,J)=RIGHT$(" "+STR$(G(I,J)),
3):NEXTJ,I
230 CLS:PRINT" SHORT RANGE SCAN"TA
B(54)"LONG RANGE SCAN":LOCATE7,4:PRINT$
I$:"I$:FORI=1T08:IFD(1)>0THENFORJ=1T08
:PRINT" MID$("EAD*",Q(I,J)+1,1):NEXTJ
240 PRINTTAB(27);
250 ON I GOSUB300,310,320,330,340,350,36
0,370
260 NEXTI
270 PRINTI$;I$
280 IFD(1)<=0THENLOCATE8,8:PRINT"INOP
ERABLE **";

```

```

610 PRINT@178,CHR$(175);:PRINT@0
,"credit";:PRINT@32,"$";:PRINT U
SING"###.##":WAD:PRINT@229,CHR$(
159);" x x :01 "CHR$(175);":
"CHR$(175);" x x :01 "CHR$(175);":30"
:PRINT@261,CHR$(159);" "CHR$(1
59);" x :05 "
620 PRINTCHR$(191);" "CHR$(191)
:" "CHR$(191);":30";
630 PRINT@293,CHR$(159);" "CHR$(
159);" "CHR$(159);":10 r u
n :20";:PRINT@325,CHR$(207);" "
CHR$(207);" x :10 "CHR$(128);
" "CHR$(128);" x $20";:PRINT@35
7,CHR$(207);" "CHR$(207);" "CH
R$(207);":30 "CHR$(128);" "
CHR$(128);" "
640 PRINTCHR$(128);
650 PRINT" $50";:PRINT@96,"paid"
:RETURN
660 :REM 'IF YOU RUN OUT OF MONE
Y
670 CLS:PRINT@256,"YOU CANT PLAY
WITHOUT MONEY!":PRINT@288,"YOU
HAVE JUST BEEN BOOTED OUT":PRINT
@324," OF THE CLUB!":END
680 FOR NT=1 TO PAY:SOUND230,1:F
OR NI=1T025:NEXT NI:NEXT NT:RETU
RN
690 PRINT@453,MID$(BX$,PV,21):P
RINT@128,"":PV=PV+1:IFPV=90THEN
PV=1
700 RETURN

```

*** STAR TREK ***

HITACHI PEACH

```

10 ' ** STAR TREK **
20 ' ** R.O. EDWARDS **
30 ' ** 31 REDESDALE RD **
40 ' ** IVANHOE 3079 **
50 ' ** MODIFIED FOR THE HITACHI PEACH B
Y MICRO-80 **
60 RANDOMIZE:DEFINTI,J,G,K,Q:CLEAR800:RE
STORE:CLS:LOCATE25,9:PRINT"STAR TREK":FO
RI=1T01000:NEXT:DEF FNR(RA)=INT(RND(1)*M
AX)+1
70 CLS:SCREEN0,,1:LOCATE19,9:PRINT"DO YO
U REQUIRE INSTRUCTIONS, (Y,N)?":GOSUB102
0:IFQ$="Y"THEN1100

```

```

470 WAD=WAD+PAY:FORI=1TO PAY:A=R
ND(60)+60:NEXT:PAY=PAY*5:GOSUB68
0:GOTO100
480 WAD=WAD+PAY:PAY=PAY*5:GOSUB6
80:GOTO100
490 :REM 'DATA FOR THE THREE REE
LS
500 DATA159,175,191,128,207,175,
159,191,159,191,175,191,207,159,
207,159,175,191,191,207,159,159,
175,191,175,191,207,191,175,191
510 DATA191,175,207,159,128,159,
207,128,175,191,175,159,175,191,
175,207,159,159,207,159,191,159,
207,175,175,159,191,159,159,191
520 DATA159,207,175,159,128,191,
175,159,207,159,175,191,128,159,
159,175,191,191,128,175,159,191,
207,175,159,207,175,159,207,175
530 :REM 'DRAW THE POKER MACHIN
E,PUT IN THE PAYOUT LISTING.
540 'DRAW MACHINE
550 PRINT@347,CHR$(255)+CHR$(255
):PRINT@316,CHR$(255):PRINT@28
4,CHR$(255):PRINT@252,CHR$(255)
:GOSUB170
560 FORX=20T041:SET(X,0,8):SET(X
,1,8):SET(X,4,8):SET(X,5,8):SET(
X,12,8):SET(X,13,8):NEXT:FORY=0T
013:SET(18,Y,8):SET(19,Y,8):SET(
42,Y,8):SET(43,Y,8):NEXT
570 FORY=6T011:SET(20,Y,8):SET(2
1,Y,8):SET(22,Y,8):SET(23,Y,8):S
ET(26,Y,8):SET(27,Y,8):SET(28,Y,
8):SET(29,Y,8):SET(32,Y,8):SET(3
3,Y,8):SET(34,Y,8):SET(35,Y,8):S
ET(38,Y,8):SET(39,Y,8):SET(40,Y,
8):SET(41,Y,8):NEXT
580 SET(22,8,6):SET(23,8,6):SET(
26,8,6):SET(29,8,6):SET(32,8,6):
SET(33,8,6):SET(34,8,6):SET(35,8
,6):SET(38,8,6)
590 FORX=8T020:SET(X,12,8):SET(X
+33,12,8):SET(X,13,8):SET(X+33,1
3,8):NEXT:FORY=14T031:SET(8,Y,8)
:SET(9,Y,8):SET(52,Y,8):SET(53,Y
,8):NEXT:FORX=8T053:SET(X,24,8):
SET(X,25,8):SET(X,26,8):SET(X,27
,8):SET(X,30,8):SET(X,31,8):NEXT
600 PRINT@42,"aristocrat":PRINT
CHR$(128);:PRINT@108,CHR$(207);:
PRINT@111,CHR$(175);:PRINT@114,C
HR$(191);:PRINT@140,CHR$(159);:P
RINT@143,CHR$(128);:PRINT@146,CH
R$(175);:PRINT@172,CHR$(128);:PR
INT@175,CHR$(159);

```

```

670 GOSUB440:LOCATE7,14:PRINT"TORPEDO CO
URSE (1-9)?" : PL=726:GOSUB980:C=QB:IFC<1
THEN400ELSEIFC>9THEN670
680 GOSUB790:X=S1:Y=S2:P=P-1
690 FORI=1TO300:NEXT:IFPC<0 AND D(1)>0T
HEN POKE1344+PC-80,46
700 X=X+X1:Y=Y+X2:IFX<.50RY<.50RX>=8.50R
Y>=8.50THEN LOCATE7,16:PRINT"BAD LUCK YOU
R TORPEDO MISSED":GOTO770
710 X0=INT(X+.5):Y0=INT(Y+.5):PC=(X0+1)*
80+(Y0-1)*2+1:IFD(1)>0THEN POKE1344+PC-8
0,140
720 IFQ(X0,Y0)=0THEN690ELSEIFD(1)>0THENP
OKE1344+PC-1,140
730 X=X0:Y=Y0:IFQ(X,Y)=2THENFORI=1TO5:IF
X=K(1,1)ANDY=K(1,2)THENK(1,3)=0:LOCATE7,
16:PRINT">>KLINGON DESTROYED<<":GOSUB93
0:GOTO770ELSENEXTI
740 IFQ(X,Y)=4THENLOCATE7,16:PRINT"STAR
DESTROYED":S=S-1:GOTO760
750 LOCATE7,16:PRINT"STAR BASE DESTROYED
...CONGRATULATIONS-TWIT!!":B=0
760 Q(X,Y)=0:G(1,02)=K*100+B*10+5
770 FORI=1TO500:NEXT:Q=0:GOSUB860:IFQ=1T
HEN300ELSELOCATE43,6:PRINTC$ ":LOCATE4
2,10:PRINTN ":LOCATE42,12:PRINTK9:IFD
(1)>0ANDPC<>0THENPOKE1344+PC-80,46
780 IFD(2)<0THEN400ELSELOCATE59,7:PRINT
RIGHT$(" "+STR$(G(1,02)),3):GOTO400
790 X2=COS((C-1)*.785398):X1=-SIN((C-1)*
.785398):RETURN
800 LOCATE7,14:PRINT"ENERGY TO BE DIVERT
ED":LOCATE7,15:PRINT"TO SHIELDS?":PL=73
8:GOSUB980:D1=INT(QB):IF E<=D1-D OR D1>5
00 THEN400ELSE E=E-D1+D:D=D1:LOCATE41,9:
PRINTN "E" ":LOCATE43,11:PRINTD " ":GOT
0400
810 CLS:LOCATE31,4:PRINT"DAMAGE REPORT":
LOCATE23,6:PRINT"DEVICE
STATUS":LOCATE23,7:PRINTI$ "-----":FOR
I=0TO5:LOCATE23,1+8:PRINTUSING"%
+##.##":D$(1),D(1):NEXT:GO
SUB960:GOTO220
820 CLS:LOCATE27,3:PRINTUSING"GALAXY MAP
AT QUADRANT #:" :Q1,Q2:PRINT:GOSUB50:F
ORI=1TO8:PRINTTAB(13)I " ":FORJ=1TO8:IF
I=Q1 AND J=Q2 OR J=Q2+1)THENPRINTCHR$(1
40):ELSEPRINT":":
830 PRINTN "Z$(I,J) " ":NEXTJ:IF I=Q1 AN
D Q2=8THENPRINTCHR$(140):ELSEPRINT":":
840 PRINTN "I:NEXTI:GOSUB850:GOSUB960:GO
TO220
850 PRINTTAB(16):FORI=1TO8:PRINTN "I:
NEXTI:PRINT:RETURN
860 IFK>0THENC$="RED"ELSEC$="GREEN":IFE<
350THENC$="YELLOW"

```

```

490 CLS:I=T+1:IFT>T0+T9THEN1000ELSEFORI=
0TO5:D(1)=D(1)+.5:IFD(1)>5THEND(1)=5ELSE
IFD(1)<5THEND(1)=D(1)+.5
500 NEXT:MAX=50:RX=FNR(RA):MAX=1100:RY=F
NR(RA):IFRX<W THEN D=D-RY-200:LOCATE14,1
0:PRINT"*** SPACE STORM *** ":IFD>0 THE
N PRINT"SHIELDS HELD ***"ELSE MAX=6:R=FN
R(RA):R=R-1:D(R)=D(R)+D/100:PRINTD$(R):"
DAMAGED ***":D=0
510 N=INT(W*8):E=INT(E*N*2):IFE<1THEN103
0ELSEQ(S1,S2)=0:Y=S1:Y=S2:GOSUB790:FORI=
1TON:S1=S1+X1:S2=S2+X2
520 IFS1<.50RS2<.50RS1>8.50RS2>=8.50THE
N60
530 IFQ(INT(S1+.5),INT(S2+.5))>1THEN LOC
ATE19,10:PRINTUSING"ENTERPRISE IS BLOCKE
D BY OBJECT AT SECTOR #:" :S1,S2:S1=INT(
S1-X1+.5):S2=INT(S2-X2+.5):FORI=1TO1000:
NEXT:GOTO550
540 NEXTI:S1=INT(S1+.5):S2=INT(S2+.5)
550 Q(S1,S2)=1:GOSUB860:GOTO220
560 X0=Q1+W*X1:Q1=FIX(X0):Y0=Q2+W*X2:Q2=
FIX(Y0):S1=FIX(X+X0-Q1)*8+.5):IFS1<1THE
N S1=S1+8:Q1=Q1-1ELSEIFS1>8THEN S1=S1-8:
Q1=Q1+1
570 S2=FIX(Y+Y0-Q2)*8+.5):IFS2<1THEN S2
=52+8:Q2=Q2-1ELSEIFS2>8THEN S2=S2-8:Q2=Q
2+1
580 Q1=INT(Q1+.5):Q2=INT(Q2+.5):IFQ1<1 0
R Q2<1 OR Q1>8 OR Q2>8THENQ1=Q1-X1:Q2=Q2
-X2:LOCATE30,11:PRINT"EDGE OF GALAXY":GO
TO580
590 GOSUB860:GOTO170
600 IFK<1THENLOCATE7,14:PRINT"NO KLINGON
S IN QUADRANT!":FORI=1TO1000:NEXT:GOTO
400ELSEQ0$="":IFK>1THENQ0$="S"
610 LOCATE7,14:PRINT"PHASERS LOCKED ON K
LINGON"Q0$":LOCATE7,15:PRINT"NO OF UN
ITS TO FIRE?":PL=789:GOSUB980:X=QB:IFX<
1THEN400ELSEIFE-X<1THEN610ELSEE=E-X
620 CLS:X=X/K:FORI=1TO3:IFK(1,3)<1THEN65
0ELSEGOSUB950:PRINT
630 IFH<K(1,3)/10THEN PRINTUSING"
SENSORS INDICATE NO DAMAGE ON KLINGON AT
SECTOR #:" :K(1,1),K(1,2):GOTO650
640 K(1,3)=K(1,3)-H:PRINTUSING"#,### UNI
TS OF ENERGY HIT KLINGON AT SECTOR #:"
(##,### LEFT):H,K(1,1),K(1,2),K(1,3):IF
K(1,3)<1THENPRINTTAB(23)">>KLINGON DESTR
OYED<<":GOSUB930
650 NEXTI:GOSUB960:GOSUB860:GOTO220
660 PC=0:IFPC<1THEN LOCATE7,14:PRINT"BAD
LUCK, YOUR OUT OF TORPEDOES":FORI=1TO10
00:NEXT:GOTO400ELSEIFP=1THEN LOCATE7,15:
PRINT"*** LAST TORPEDO ***":

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290 GOTO400
300 PRINT"STARDATE
511:Q=Q1-1:GOSUB380:RETURN
310 PRINT"CONDITION
511:Q=Q1-1:GOSUB380:RETURN
320 PRINTUSING"QUADRANT
511:Q=Q1-1:GOSUB380:RETURN
330 PRINTUSING"SECTOR
511:Q=Q1-1:GOSUB380:RETURN
340 PRINT"ENERGY
511:Q=Q1-1:GOSUB380:RETURN
350 PRINT"PHOTON TORPEDOES":PRINT TAB(
511:Q=Q1-1:GOSUB380:RETURN
360 PRINT"SHIELDS
511:Q=Q1-1:GOSUB380:RETURN
370 PRINT"KLINGONS LEFT
511:Q=Q1-1:GOSUB380:RETURN
380 IFD(2)>0 THEN PRINTUSING" * ## * ##
# * ## *":G(Q,02-1),G(Q,02),G(Q,02+1) E
LSE IF Q=Q1 THEN PRINTN " * INOPERABLE *
* " ELSE PRINT
390 RETURN
400 LOCATE7,14:PRINT"
":LOCATE7,15:PRINT"
":LOCATE7,16:PRINT
7,14:PRINT"COMMAND?":GOSUB420:Z$(Q1,Q2)
=RIGHT$(" "+STR$(G(Q1,Q2)),3)
410 Q$=INKEY$:IFQ$=""THEN410ELSEA=ASC(Q$)
)-48:IFAX<0ORA>5THEN410ELSEIFA<4ANDA>0AND
D(A+2)<0THENLOCATE7,14:PRINT" * "D$(A+2)
) INOPERABLE **:FORI=1TO1000:NEXT:GOT
0400ELSE ON A+1 GOTO460,600,660,800,810,
820
420 LOCATE55,12:PRINT"COMMANDS":LOCATE
52,13:PRINT"0 SET COURSE":LOCATE52,14:P
RINT"1 PHASERS":LOCATE52,15:PRINT"2 PH
OTON TORPEDOES":LOCATE52,16:PRINT"3 SHI
ELDS":LOCATE52,17:PRINT"4 DAMAGE REPOR
T":
430 LOCATE52,18:PRINT"5 GALAXY MAP":RETU
RN
440 LOCATE55,12:PRINTN " 3 " :LOCATE
52,13:PRINTN " 4 : 2":LOCATE52,14:P
RINTN " * *":LOCATE52,15:PRINTN "
* *":LOCATE52,16:PRINTN " 6 : 8
":LOCATE52,17:PRINTN " 7 " :
450 RETURN
460 GOSUB440:LOCATE7,14:PRINT"COURSE (1-
9)?" : PL=718:GOSUB980:C=QB:IFC<1THEN400E
LSEIFC>9THEN460
470 LOCATE7,15:PRINT"WARP FACTOR (.1-12)
?" : PL=789:GOSUB980:W=QB:IFW<0THEN400E
LSEIFW>12THEN470
480 IFW<1ANDD(0)<0THENLOCATE7,16:PRINT"
WARP ENGINES DAMAGED, MAX SPEED WARP 1":
FORI=1TO1000:NEXT:GOTO400

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870 FORI=S1-1TOS1+1:FORJ=S2-1TOS2+1:IFQ(I
I,J)<>3THENNEXTJ,I:GOTO890
880 E=3500:P=10:D=500:FORI=OTOS:D(I)=5:N
EXT:C#= "DOCKED":IFK<0THENCLS:Q=1:LOCATE1
9,10:PRINT"STARBASE SHIELDS PROTECT THE
ENTERPRISE":FORI=1TO1000:NEXT:RETURN
890 IFK<1THENRETURNELSE=1:CLS:FORI=1TO3
:X=K(I,3):IFX<0THEN920ELSEGOSUB950:H=H+
10:D=D-H:PRINT:PRINTUSING"#,### UNITS OF
ENERGY HIT ENTERPRISE FROM KLINGON AT S
ECTOR #:#,H,K(I,1),K(I,2)
900 K(I,3)=INT(X-X/4*AND(1)+.5):IF D>0 T
HEN PRINTTAB(23):PRINTUSING"SHIELDS REM
AINING=###":D:GOTO920
910 MAX=6:R=FNR(RA):R=R-1:H1=INT((-D*(R
D(1)+.5)/50)*10+.5)/10:H=INT(-D-H1):D(R)
=D(R)-H1:E=E-H:PRINTUSING"SHIELDS ARE DO
WN, YOU HAVE LOST ### ENERGY POINTS (#,#
## LEFT)":H,E:PRINT"AND BEEN HIT ON YOUR
"D$(R)" FOR"H1"POINTS."":D=0
920 NEXT:GOSUB960:IFE<1THEN1030ELSERETUR
N
930 K=K-1:K9=K9-1:IFK9<1THEN1040ELSEQ(K
I,1),K(I,2)=0:G(Q1,Q2)=G(Q1,Q2)-100:RET
URN
940 MAX=8:R1=FNR(RA):R2=FNR(RA):IFQ(R1,R
2)<>0THEN940ELSERETURN
950 H=INT(X/(SQR((K(I,1)-S1)^2+(K(I,2)-S
2)^2))*(2+AND(O)):RETURN
960 LOCATE7,18:PRINT"PRESS ANY KEY TO CO
NTINUE":Q#=INKEY$
970 IFINKEY$=""THEN970ELSECLS:RETURN
980 LOCATE35,14:Q$=""":Q$=Q$+INKEY$
990 Q1$=INKEY$:IFQ1$=""THEN990ELSEQ=ASC(
Q1$):IFQ=8THEN980ELSEIFQ<>13THENIFQ<46OR
Q>57ORQ=47THEN990ELSEQ$=Q$+Q1$:LOCATE35,
14:PRINTQ$;P$;:IFLEN(Q$)<6THEN990
1000 IFQ$<>"":THENQ$=VAL(Q$)ELSEQ$=0
1010 LOCATE35,14:PRINT"":RETURN
1020 Q$=INKEY$:IFQ$<>"Y"ANDQ$<>"N"THEN10
20ELSERETURN
1030 FORI=1TO1000:NEXT:CLS:LOCATE7,8:PRI
NT"IT IS STARDATE"THE ENTERPRISE HAS
BEEN DESTROYED THE FEDERATION WILL BE C
ONQUERED THERE ARE STILL"K9"KLINGON BATT
LE CRUISERS LEFT ...YOU ARE DEAD."":GO
TO1090
1040 FORI=1TO1000:NEXT:CLS:LOCATE7,6:PRI
NT"IT IS STARDATE"THE LAST KLI
NGON BATTLE CRUISER IN THE GALAXY HAS BE
EN DESTROYEDTHE FEDERATION HAS BEEN SAVE
DYOU HAVE BEEN PROMOTED TO ADMIRAL.YOU D
ESTROYED"K0"KLINGONS IN"1-T0"STARDATES"
1050 F=INT(K0/(T-T0)*1000):DNF/500+1GOTO
1080,1070,1060,1060
1060 PRINT"YOUR RATING IS"F"WHICH IS ABS
OLUTELY FANTASTIC! TAKE IT YOU HAVE PLAY
ED BEFORE!THAT IS BETTER THAN ONE KLINGO
N PER STARDATE!":GOTO1090
1070 PRINT"NOT BAD, YOUR RATING IS"F"IT
COULD BE BETTER":GOTO1090
1080 PRINT"THIS IS A PRETTY LOUSY SCORE,
YOU CAN DO AHELL OF A LOT BETTER THAN"F
":GOTO1090
1090 LOCATE7,16:PRINT"DO YOU WISH TO ATT
EMPT IT AGAIN, (Y,N)?":GOSUB1020:IFQ$="Y
"THEN60ELSEPRINT"O.K. SEE YOU."":FORI=1TO
1000:NEXT:CLS:END
1100 I$=CHR$(34):CLS:PRINT"THE GALAXY IS
DIVIDED INTO 64 QUADRANTS WITH THE FOLL
OWING COORDINATES":PRINT"1 2 3
4 5 6 7 8":FORI=1TO8:PRINTI:;
FORJ=1TO8
1110 PRINT":STRING$(3,95):NEXT:PRINT":
"I:NEXT:PRINT"1 2 3 4 5 6
7 8":PRINT"EACH QUADRANT IS SIMILAR
LY DIVIDED INTO 64 SECTORS":GOSUB960
1120 PRINTTAB(33)"**DEVICES**":PRINT"C
OURSE (COMMAND 0)":PRINT"ANY REAL NUMBE
R BETWEEN 1 AND 8.9, THE NUMBER INDICATI
NG DIRECTION STARTING AT THE RIGHT AND
GOING COUNTER CLOCKWISE:"
1130 PRINT"3 ":PRINT"4
: 2 ":PRINT"5---*---1":PRINT"6
: 8 ":PRINT"7":GOSUB960
1140 PRINT"WARP ENGINES":PRINT:PRINT"WA
RP FACTOR IS A REAL NUMBER BETWEEN 0 AND
12 EACH WARP FACTOR WILL MOVE THE EN
TERPRISE ONE QUADRANT. EACH .125 WARP FA
CTORS WILL MOVE THE ENTERPRISE ONE SE
CTOR."
1150 PRINT"EG: WARP .125 = 1 SECTOR":PRI
NT" WARP .5 = 4 SECTORS (HALF A QUAD
RANT)":PRINT" WARP 1 = 1 QUADRANT"
:PRINT" WARP 5 = 5 QUADRANTS":GOSU
B960
1160 PRINT:PRINT"FOR EXAMPLE, IF YOU TRA
VEL FROM:"PRINT"QUADRANT 1:1, SECTOR 1:
1, IN DIRECTION 1 AT WARP 2 YOU WOULD ST
OP AT":PRINT"QUADRANT 1:3, SECTOR 1:1, 1
N THE NEXT STARDATE."
1170 PRINT"TAB(23)"** NOTE **":PRINT"EV
ERY USE OF THE WARP ENGINES TAKES ONE ST
ARDATE. IF THE ENTERPRISE IS BLOCKED BY
SOMETHING DURING INTRA-QUADRANT TRAVEL
IT WILL STOP IN FRONT OF IT (A
ND WASTE A STARDATE)".GOSUB960
1180 PRINT"SHORT RANGE SENSORS":PRINT"THE
SHORT RANGE SENSORS OF THE ENTERPRISE
DISPLAYS A DETAILED VIEW OF THE QU
ADRANT IT IS CURRENTLY IN."
1190 PRINT"THE ENTERPRISE LOOKS LIKE "I$
"E"ON THE SCREEN AND KLINGON BATTLE C
RUISERS LOOK LIKE "I$A" "I$, "STARBASES LO
OK LIKE "I$O" "I$AND STARS LOOK LIKE "I$
"*":GOSUB960
1200 PRINT"LONG RANGE SENSORS":PRINT:PR
INT"THE LONG RANGE SENSORS OF THE ENTERP
RISE DISPLAYS INFORMATION AS TO THE CONT
ENTSOF THE NINE CLOSEST QUADRANTS, THE C
ENTRE BEING THE CURRENT QUADRANT."
1210 PRINT"THE ONES DIGIT REPRESENTS THE
NUMBER OF STARS":PRINT"TEENS
STARBASES."":PRINT"H
UNDREDS
KLING
ONS."
1220 PRINT"FOR EXAMPLE:"PRINT"215 MEANS
2 KLINGONS, 1 STARBASE, AND 5 STARS."
PRINT"108 MEANS 1 KLINGON, 0 STARBASES,
AND 8 STARS."PRINT"2 MEANS 0 KLINGONS,
0 STARBASES, AND 2 STARS."":GOSUB960
1230 PRINT"GALAXY SCAN (COMMAND 5)":PRI
NT:PRINT"THIS COMMAND SHOWS A CURRENT MA
P OF THE KNOWN GALAXY. THIS IS UPDAT
ED BY THE LONG RANGE SCANNERS."":GOSUB960
1240 PRINT"PHASERS (COMMAND 1)":PRINT:P
RINT"ANY PORTION OF THE ENERGY AVAILAB
LE CAN BE FIRED, THE ON-BOARD BATTLE COM
PUTERDIVIDES THIS AMOUNT AMONG THE KLING
ON CRUISERS IN THE QUADRANT AND DETERMIN
ES THE VARIOUS DIRECTIONS OF FIRE."
1250 PRINT"THE EFFECTIVENESS OF A HIT IS
MAINLY DEPENDANT ON THE DISTANCE TO THE
CRUISER. EACH CRUISER STARTS WITH 200
UNITS OF ENERGY AND CAN FIRE AN AMOUNT E
QUAL TO HOWEVER MUCH IT HAS LEFT."":GO
SUB960
1260 PRINT"PHOTON TORPEDOES (COMMAND 2):
":PRINT:PRINT"THE ENTERPRISE STARTS WITH
10 PHOTON TORPEDOES, ONE TORPEDO DESTRO
YS WHATEVER IT HITS. THE RANGE OF A PHOTON
TORPEDO (LIKE PHASERS) IS LIMITED TO"
1270 PRINT"THE CURRENT QUADRANT. THE COU
RSE OF A PHOTON TORPEDO IS SET THE SAME
WAY AS THAT OF THE ENTERPRISE."":GOSUB960
1280 PRINT"DAMAGE CONTROL REPORT (COMMAN
D 4)":PRINT:PRINT"THE DAMAGE CONTROL RE
PORT LISTS THE MAIN DEVICES AND THEIR ST
ATE OF REPAIR. A NEGATIVE STATE OF R
EPAIR INDICATES A DISABLED DEVICE. DEVIC
ES CAN BE DAMAGED"
1290 PRINT"BY A SPACE STORM OR KLINGONS,
AND ANY DAMAGED DEVICE IS REPAIRED PART
IALLY EVERY STARDATE."":GOSUB960

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1300 PRINT "SHIELDS (COMMAND 3):":PRINT:P
RINT "SHIELDS WILL PROTECT THE ENTERPRISE
FROM KLINGON FIRE. IF SHIELDS DROP (TO
0) THE KLINGON FIRE WILL DAMAGE AND DISAB
E SECTIONS OF THE SHIP."
1310 PRINT "THE ENTERPRISE'S SHIELDS STAR
T AT 500 UNITS (OF ENERGY), WHICH IS THE
MAXIMUM." :GOSUB 960:CLS:GOTO 80
1320 N$=INKEY$:IF N$="" THEN 1320 ELSE N$=VAL(
N$):RETURN

*** ARISTOCRAT ***

HITACHI PEACH

10 ' (C) R. DYBALL : MODIFIED FOR THE
HITACHI PEACH BY MICRO-80
20 RANDOMIZE:CLER1000:DEFINT A=0,Q=V,X-Z
30 CLS:WAD=10:DIM R$(3,30),RP(3):RP(1)=21
3:RP(2)=222:RP(3)=230:CP$(1)="0":CP$(2)=
"0":CP$(3)="0":CP$(4)="/" :CP$(5)="-":CP$(
6)="-":CP$(7)=CHR$(92):CP$(8)="0":CP$(9
)="0":CP$(10)="0"
40 'DRAW THE POKER MACHINE THEN READ IN
THE DATA FOR THE REELS
50 SCREENO,1:CLS:GOSUB 510:FORR=1 TO 3:FOR
P=1 TO 30:READ R$(R,P):IF LEN(R$(R,P))=1 THEN
R$(R,P)=" "+R$(R,P):ELSER$(R,P)=" "+R$(R
,P)
60 NEXT P:NEXT R
70 LOCATE 7,20:PRINT "IF YOU WANT TO TRY A
NOTHER GAME ANY TIME
PRESS <
RETURN>":A$="" :FOR I=1 TO 1000:NEXT LOCATE
7,18:PRINTCHR$(31):LOCATE 7,18:PRINT "TO
PUT IN COIN PRESS SPACE BAR":MAX=30:R=F
NRN(RA):S=FNRN(RA):T=FNRN(RA)
80 BEEP:LOCATE 17,7:PRINT "":PRINTUSING"#
###":PAY:IF WAD=0 THEN 630 ELSE LOCATE 17,4:P
RINT " ":PRINTUSING"###.##":WAD:AS=INKE
Y$:IFA$="" THEN 80 ELSE IFA$=CHR$(13) THEN CLS
:GOTO 30 ELSE LOCATE 17,18:PRINTCHR$(31)::WA
D=WAD-.2:LOCATE 17,4:PRINT " ":
90 PRINTUSING"###.##":WAD:
100 'THIS LINE PULLS DOWN THE HANDLE,THE
FOLLOWING LINES PRINTIN THE DIFFERENT P
OSITIONS
110 FOR I=3 TO 5:PSET(83,1):NEXT I:FOR I=3 TO 5
:PSET(83,1):NEXT I:FOR I=1 TO 14:ONIGOSUB1
60,160,160,150,150,150,140,140,140,130,1
40,150,160,170
120 NEXT I:GOTO 190
130 FOR D=1 TO 40:NEXT D:RETURN
140 LOCATE 5,7:PRINT " ":LOCATE 5,8:PRI
NT " ":LOCATE 5,9:PRINT " ":LOCATE 5,11:
0:PRINTCHR$(135)+CHR$(32):LOCATE 5,11:
PRINTCHR$(138)+CHR$(32):LOCATE 5,12:PRI
NTCHR$(138)+CHR$(32):RETURN
150 LOCATE 5,7:PRINT " ":LOCATE 5,8:PRI
NT " ":LOCATE 5,9:PRINTCHR$(135)+CHR$(1
35):LOCATE 5,10:PRINTCHR$(138)+CHR$(32)
:LOCATE 5,11:PRINTCHR$(138)+CHR$(32):R
ETURN
160 LOCATE 5,7:PRINT " ":LOCATE 5,8:PRI
NTCHR$(135)+CHR$(135):LOCATE 5,9:PRINTC
HR$(138)+CHR$(32):LOCATE 5,10:PRINTCHR$(
138)+CHR$(32):RETURN
170 LOCATE 5,7:PRINTCHR$(135)+CHR$(135):
LOCATE 5,8:PRINTCHR$(138)+CHR$(32):LOC
ATE 5,9:PRINTCHR$(138)+CHR$(32):RETURN
180 ' DETERMINE APPROX. HOW MANY TIME
S EACH REEL TURNS OVER SOMETIMES
THE REELS WILL TIP OVER JUST AFTER THEY
STOP
190 PAY=0:MAX=25:KK=FNRN(RA)+25:MAX=5:S1
=(KK+FNRN(RA)-3)*3/5:S2=(KK+FNRN(RA)-3)*
4/5:FORRS=1 TO KK:MAX=20:IF RS>S2 AND FNRN
(RA)=1 THEN 230 ELSE IF RS>S2 THEN 260 ELSE
IF RS>S1 THEN 230 ELSE R=R-1:IF R<=1 THEN
R=30
200 REM PRINT CHARACTERS ON THE REELS
210 RA=R-1:RB=R-2:IFR=1 THEN RA=30:RB=29
220 LOCATE 28,8:PRINTR$(1,R):LOCATE 28,7:
PRINTR$(1,RA):LOCATE 28,6:PRINTR$(1,RB):
230 T=T-1:IFT<1 THEN T=30
240 TA=T-1:TB=T-2:IFT=1 THEN TA=30:TB=29
250 LOCATE 37,8:PRINTR$(2,T):LOCATE 37,7:
PRINTR$(2,TA):LOCATE 37,6:PRINTR$(2,TB):
260 S=S-1:IFS<1 THEN S=30
270 SA=S-1:SB=S-2:IFS=1 THEN SA=30:SB=29
280 LOCATE 45,8:PRINTR$(3,S):LOCATE 45,7:
PRINTR$(3,SA):LOCATE 45,6:PRINTR$(3,SB):
290 NEXT
300 'CHECK ON PAYOUT,IF LUCKY, ADD TOGET
HER THE 3 CHRS ON REELS
310 TR$=R$(1,RA)+R$(2,TA)+R$(3,SA)
320 'CHECK IF JACKPOT
330 IFR$=" A A A" THEN LOCATE 7,18:PRIN
T "JACKPOT - $50 -":FOR D=1 TO 100:NEXT:PAY
=50:LOCATE 7,18:PRINTCHR$(131):GOTO 450
340 IFL$=" (TR$,6) =" A A" THEN LOCATE 7,1
8:PRINT "JACKPOT - $20 -":FOR D=1 TO 100:NE
XT:PAY=20:LOCATE 7,18:PRINTCHR$(31)::GOTO
450
350 'CHECK IF RUN
360 IFR$=" 10 J 0" OR TR$=" Q K A" O
R TR$=" J Q K" THEN PAY=4:GOTO 440

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370 X$=R$(1,RA):Y$=R$(2,TA):Z$=R$(3,SA)
380 'CHECK IF A SMALLER PAYOUT
390 IF X$=Y$ AND Y$=Z$ AND Z$=" 10" THEN PAY=2:
GOTO 440
400 IF X$=Y$ AND X$=" 10" THEN PAY=1:GOTO 440
410 IF X$=Y$ AND Y$=" 10" THEN PAY=2:GOTO 440
420 IF X$=" 10" THEN PAY=-2:GOTO 440
430 IF X$=Y$ AND Y$=Z$ THEN PAY=6:GOTO 440 ELSE
80:GOTO 40 IF NO PAYOUT
440 WAD=WAD+PAY:PAY=PAY*5:GOTO 80
450 WAD=WAD+PAY:PAY=PAY*5:GOSUB 510:GOTO 80
460 'DATA FOR THE THREE REELS
470 DATA 10,Q,K,A,J,Q,10,K,10,K,Q,K,J,10,
J,10,Q,K,J,10,Q,K,10,Q,K,Q,K,J,K,Q,K
480 DATA Q,J,10,A,10,J,A,Q,K,10,Q,K,Q
,J,10,10,J,10,K,10,J,Q,Q,10,K,10,10,K
490 DATA 10,J,Q,10,A,K,Q,10,J,10,Q,K,A,10
,10,Q,K,K,A,Q,10,K,J,Q,10,J,Q,10,J,Q
500 'DRAW THE POKER MACHINE, PUT IN THE
PAYOUT LISTING.
510 FOR I=3 TO 8:PSET(1,18):PSET(1,8):PSE
T(1,0):PSET(1,42):PSET(1,37):NEXT:FOR I=9
TO 18:PSET(37,1):PSET(87,1):PSET(53,1):PS
ET(70,1):NEXT:FOR I=1 TO 3:PSET(94,1+30):PS
ET(95,1+30):PSET(95,1+30):PSET(96,1+30):
NEXT:FOR I=18 TO 32:PSET(97,1):PSET(98,1)
520 NEXT
530 LINE(200,45)-(400,75),PSET,B:LINE(18
0,75)-(420,130),PSET,B:LINE(220,0)-(380,
0),PSET:LINE(220,0)-(200,45),PSET:LINE(3
80,0)-(400,45),PSET:LINE(260,45)-(260,75
),PSET:LINE(340,45)-(340,75),PSET
540 GOSUB 140:GOSUB 150:GOSUB 160:GOSUB 170:
LINE(420,100)-(436,120),PSET,B
550 FOR I=1 TO 3
560 PSET(96,14+1):PSET(99,14+1):PSET(96+
I,14):NEXT:FOR I=8 TO 44:PSET(31,1):PSET(93
,1):NEXT:FOR I=38 TO 41:PSET(36,1):PSET(88,
1):NEXT:FOR I=32 TO 93:PSET(1,44):NEXT:PSET
(38,43):PSET(86,43):FOR I=1 TO 7:PSET(30+I,
8-1):PSET(93-1,8-1):NEXT
570 FOR I=2 TO 6:PSET(81,1):PSET(82,1):PSET
(84,1):PSET(85,1):NEXT:PSET(83,2):PSET(8
3,6):LOCATE 33,1:PRINT "ARISTOCRAT":LOCATE
TE 28,6:PRINT "J ":LOCATE 28,7:PRINT " Q "
:LOCATE 37,8:PRINT " K ":LOCATE 28,8:PRIN
T "10 ":LOCATE 37,7:PRINT " A ":
580 LOCATE 37,6:PRINT " Q ":LOCATE 45,7:PR
INT " K ":LOCATE 45,8:PRINT " J ":
590 LOCATE 45,6:PRINT " Q ":FOR I=1 TO 14:STE
P 3:PSET(38,1):PSET(52,1):PSET(54,1):PSET
(86,1):PSET(69,1):PSET(71,1):PSET(86,1):
NEXT:LOCATE 18,3:PRINT "CREDIT":LOCATE 17,
4:PRINT "$":PRINTUSING"###.##":WAD:LOCATE
TE 25,10

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270 IFP1=16THENVY=VY+2
280 IFP2=16THENVX=VX-2
290 IFP2=64THENVX=VX+2
300 IFBH=0THEN330
310 IFPX>CXTHENVY=VX-1ELSEIFPX<CXTHENVX=VX+1
320 IFPY>CYTHENVY=VY-1ELSEIFPY<CYTHENVY=VY+1
330 PRINT@937,CHR$(181);"X";CHR$(186);"
$(186);" ";PRINT@951,VY;PRINT@941,VX;
";CHR$(181);"Y";CHR
340 PRINT@2,SC;FORL=1TO2:OX=PX:OY=PY:PX=PX+VX/6:PY=PY+VY/6:IFPY
<1ORPY>13THENVY=VY*-1:IFPY<1THENPY=1ELSEPY=13
350 IFBH=0THEN390
360 IFPX<CX-2ORPX>CX+2ORPY<CY-2ORPY>CY+2THEN390ELSEPX=INT(PX):PY
=INT(PY)
370 IFPX>CXTHENPX=PX-1ELSEIFPX<CXTHENPX=PX+1ELSEIFPY<CYTHENPY=PY
+1ELSEIFPY>CYTHENPY=PY-1ELSEIFPY<CYTHENPY=CYTHEN560
380 X1=PX:Y1=PY:GOSUB150:PRINT@PP,P$;:FORL=1TO20:NEXT:GOTO370
390 IFPX<1THENX1=INT(OX):Y1=INT(OY):GOSUB150:PRINT@PP,B$;:GOTO49
0 REM ** ESCAPE **
400 IFPX>30THENPX=30:VX=VX*-1
410 X1=INT(PX):Y1=INT(PY):GOSUB150:IFPEEK(PP+C3)=174THENCX=CB+1
420 IFPEEK(PP+C3)=153THENPRINT@PP,P$;:X1=INT(OX):Y1=INT(OY):GOSU
B150:PRINT@PP,B$;:GOTO560 REM **EXPLODES **
430 X1=INT(OX):Y1=INT(OY):GOSUB150:PRINT@PP,B$;:X1=INT(PX):Y1=IN
T(PY):GOSUB150:PRINT@PP,P$;:POKEC4,M:POKEC5,127:A=USR(395)
440 NEXTL:PRINT@2,STRING$(6,176);PRINT@30,HS(1);:X1=RND(30):Y1=
RND(13):GOSUB150:IFPEEK(PP+C3)=153THENCX=PP+C3:FORL=1TO5:POKE00,
191:POKE00+1,191:POKE00,188:POKE00+1,188:POKE00,140:POKE00+1,140
:POKE00,128:POKE00+1,128:NEXTK
450 TT=TT+1:T=T+1:IFT>TLTHENT=0:Y1=RND(6)*2:X1=RND(12)*2+6:IFX1<
20ANDX1>12THENVY=Y1-1
460 IFTT=2THENT=0:PRINT@PP," ";:FP=FP-1:IFFP=901THENGOTO560 REM
**NO FUEL EXPLODES ***
470 IFT=0THENGOSUB150:IFPEEK(PP+C3)<>174THENPRINT@PP,WB$;
480 GOTO170
490 IFCB=0THENPRINT@133,"MISSION UNSUCCESSFUL.";:FORL=1TO500:NEX
T:PRINT@197,"URANIUM CORE NOT PRESENT IN POD BAY.";:FORL=1TO500:
NEXT:PRINT@261,"YOU ARE RELIEVED OF YOUR COMMAND.";:FORL=1TO1500
:NEXT:GOTO860 REM *** HIGHSCORES ***
500 IFBH=1THEN X1=CX:Y1=CY:GOSUB150:POKEC4,M:POKEC5,127:FORL=1TO
5:PRINT@PP,BH$;:FORL=1TO20:NEXT:PRINT@PP,B$;:A=USR(2007):NEXTL
510 GF=0:SC=SC+LV*CB*5:LV=LV+1:VX=0:VY=0:PX=1:POKEC4,M:POKEC5,12
7:A=USR(444)
520 FP=CB*7+FP:IFFP>935THENFP=935
530 PRINT@897,"FUEL:";:POKEC4,M:POKEC5,127:FORL=902TOFP:PRINT@L,
CHR$(143);:A=USR(866):NEXT:CB=0:BH=0
540 GOTO790
550 REM***EXPLODE****
560 POKEC4,EX:POKEC5,126:POKE32524,PX*4-2:POKE32525,PY*3:A=USR(0
):POKE32524,PX*4-2:POKE32525,PY*3:A=USR(0)
570 FORK=1TOLEN(60$):PRINT@470,LEFT$(60$,K);:FORG=1TO70:NEXT:NEX
T:FORL=1TO500:NEXT:GOTO860
580 CLEAR2000:FORL=3271TO32767:READD:POKEC4,M:POKEC5,127:FORL=32688TO3
2716:READD:POKEC4,M:POKEC5,126:FORL=32305TO32651:READD:POKEC4,M:POKEC5,127:
590 DATA1,0,4,33,0,60,126,254,32,40,17,254,92,242,238,127,11,62,
0,184,32,2,185,200,35,195,211,127,54,191,195,221,127,229,22,0,95
,33,63,1,237,82,125,225,119,195,221,127,255,255,255

```

```

600 PRINT"10 X X:1 Q Q Q 30";:L
OCATE25,11:PRINT"10 10 X:5 K K K
:30";
610 LOCATE25,12:PRINT"10 10 10:10 ANY
RUN:20";:LOCATE25,13:PRINT" J J X:1
O A X $20";:LOCATE25,14:PRINT" J
J J:30 A A A $50";:LOCATE7,7:PRINT
"COINS PAID";:RETURN
620 'IF YOU RUN OUT OF MONEY
630 CLS:LOCATE15,11:PRINT"YOU CANT PLAY
HERE WITH NO MONEY!";LOCATE15,11:PRINT"Y
OU HAVE JUST BEEN BOOTED OUT OF THE CLUB
!";END

```

**** LII/16K URANIUM CORE ****

TRS-80/SYSTEM-80

```

10 POKE16561,48:POKE16562,126:DEFINT A-Z:CLER200:CLS
20 REM *****
30 REM * U R A N I U M C O R E *
40 REM * (C) *
50 REM * BY PSIONIC SOFTWARE *
60 REM *****
70 REM * BY D.STEVENS + B.THOMAS *
80 REM * 406 SANDGATE ROAD, SHORTLAND *
90 REM * NEWCASTLE,N.S.W. 28/1/82-30/1/82 *
100 REM *****
110 FORL=0TO960STEP64:IFPEEK(L+15360)=32THENPRINT@L,"<<T>>RS-80
OR <<S>>SYSTEM-80";ELSENEXT
120 AS=INKEY$:IFA$="I"THEN130ELSEIFA$="S"THENOUT254,255ELSEGOTO1
20
130 FORK=1TO15:PRINT@L," ";:FORS=1TO5:PRINTCHR$(RND(63)+128):NE
XT:PRINT" U R A N I U M C O R E ";:FORS=1TO5:PRINTCHR$(RND(63
)+128);:NEXT:FORZ=1TO30:NEXT:L=L+1:NEXT:GOTO580
140 REM ** CONVERSION **
150 PP=INT(X1)*2+INT(Y1)*64-1:RETURN
160 REM ** MOVE PLAYER **
170 P1=PEEK(C1):P2=PEEK(C2)
180 I$=INKEY$:IFI$<>" "ORGF=1THEN260
190 DL=10:Y1=PY:POKEC4,M:POKEC5,127:FORX1=PX+1TOPX+5:IFX1>30THEN
220
200 GOSUB150:IFPEEK(PP+C3)=174THENG=1:A=USR(531):GOTO220
210 PRINT@PP,CHR$(140);:A=USR(5041):NEXT
220 IFGF=1THENDL=100
230 ZZ=X1:IFZZ>30THENZZ=30
240 FORX1=ZZTOPX+1STEP-1:GOSUB150:PRINT@PP,B$;:IFGF=1PRINT@PP-2,
UC$;ELSEPRINT@PP-2,CHR$(140);
250 A=USR(5041):NEXT:GF=1:CB=CB+1
260 IFP1=8THENVY=VY-2

```



```

800 X1=CY-1:Y1=CY:GOSUB150:PRINT@PP,UC$;X1=CY+1:GOSUB150:PRINT@
PP,UC$;Y1=CY+1:X1=CY:GOSUB150:PRINT@PP,UC$;Y1=CY-1:GOSUB150:PR
INT@PP,UC$;
810 IFLV<4THENB20ELSEX1=CY-1:Y1=CY-1:GOSUB150:IFPEEK(PP+C3)=174T
HENBH=1ELSEX1=CY+1:GOSUB150:IFPEEK(PP+C3)=174THENBH=1ELSEY1=CY+1
:GOSUB150:IFPEEK(PP+C3)=174THENBH=1ELSEX1=CY-1:GOSUB150:IFPEEK(P
P+C3)=174THENBH=1
820 IFBH=0THENB40ELSEFORX1=CY-2TOCX+2:FORY1=CY-2TOCY+2:IFX1<10RX
1>300RY1<10RY1>13THENB30ELSEGOSUB150:PRINT@PP,B$;
830 NEXT:Y1=CY:X1=CY:Y1=CY:GOSUB150:PRINT@PP,B$;
840 GOT0170
850 REM *** HIGH SCORES ***
860 GF=0:VX=0:VY=0:BH=0:CB=0:LV=1:Z=0:FORL=10TO1STEP-1:IFSC>HS(L
)THENZ=L
870 NEXTL:IFZ=0THENZ=1:GOTO970:ELSECLS:PRINT@0,TB$;PRINT@960,HB
$;PRINT@0,VB$;PRINT@61,VB$;PRINT@77,UT$;
880 PRINT@205,"** C O N G R A T U L A T I O N S **":PRINT@327,"
THE INTERSTELLAR HIGH COMMAND WISHES TO INFORM";PRINT@386,"YOU
THAT YOU HAVE ONE OF THE BEST MISSION RECORDS TO DATE.";PRINT@5
26,"PLEASE TYPE IN YOUR IDENTITY-CODE";
890 N$="":I$=INKEY$:PRINT@666,CHR$(188);STRING$(6,140);CHR$(188)
;PRINT@730,CHR$(191);PRINT@737,CHR$(191);PRINT@794,STRING$(8,
131);POKEC4,M:POKEC5,127:FORL=700TO600STEP-5:X=USR(L+500):FORK=
1TO50:NEXT:NEXT
900 I$=INKEY$:IF I$=CHR$(8)THENIFLEN(N$)=0GOTO900ELSEN$=LEFT$(N$,
(LEN(N$)-1)):PRINT@732," ";GOTO930
910 IF I$=CHR$(10)THEN900
920 IF I$=CHR$(13)THEN950ELSEN$=N$+I$
930 IFLEN(N$)>4THENN$=LEFT$(N$,4)
940 PRINT@732,N$;GOTO900
950 POKEC5,127:POKEC4,M:FORK=1TO30:A=USR(RND(255)+270):NEXT:N$=N
$+" ";N$=LEFT$(N$,4):IFN$=" "THENN$="NONE"
960 FORL=10TO(7+1)STEP-1:HS$(L)=HS$(L-1):HS$(L)=HS(L-1):NEXT:HS$(
Z)=N$:HS(Z)=SC
970 CLS:PRINT@0,STRING$(64,131);PRINT@960,STRING$(63,176);:FORL
=0TO896STEP64:PRINT@L,CHR$(191);PRINT@L+63,CHR$(191);NEXT:POKE
16320,191:POKE16383,191:PRINT@49,CHR$(139);"HIGH SCORES":CHR$(13
5);PS=115
980 FORL=1TO10:IFHS(L)=0THEN990ELSEPRINT@PS,HS$(L):HS(L):
990 PS=PS+64:NEXTL:PS=(Z-1)*64+115:IFPS<115THENPS=115
1000 REM *** TITLE ***
1010 PRINT@755,CHR$(139);STRING$(6,191);CHR$(135);PRINT@820,CHR
$(130);STRING$(4,143);CHR$(129);PRINT@879,CHR$(136);STRING$(5,1
91);CHR$(189);CHR$(146);CHR$(161);CHR$(190);STRING$(5,191);CHR$(
132);
1020 PRINT@944,CHR$(130);CHR$(143);STRING$(2,191);CHR$(159);CHR$(
135);CHR$(131);CHR$(143);STRING$(2,191);CHR$(159);CHR$(129
);PRINT@135,CHR$(191);PRINT@140,CHR$(191);PRINT@199,CHR$(191)
;PRINT@204,CHR$(191);PRINT@263,CHR$(191);PRINT@268,CHR$(191);
1030 PRINT@327,CHR$(143);STRING$(4,176);CHR$(143);PRINT@205,CHR
$(160);STRING$(2,176);STRING$(2,176);CHR$(176);CHR$(176);
1040 PRINT@269,CHR$(177);CHR$(140);CHR$(142);CHR$(191);CHR$(
191);CHR$(140);CHR$(176);CHR$(191);CHR$(170);CHR$(149)
;CHR$(191);CHR$(191);CHR$(191);CHR$(131);CHR$(140);CHR$(176);CHR$(14
0);CHR$(131);CHR$(191);

```

```

600 DATA205,127,10,62,1,14,0,237,91,61,64,69,47,230,3,179,211,25
5,13,40,4,16,246,20,242,37,32,241,201
610 DATA33,0,60,54,128,17,1,60,1,255,3,237,176,201,62,198,24,6,6
2,134,24,2,62,70,50,124,126,122,6,255,4,214,3,242,79,126,198,3,2
03,39,79,104,38,0,6,6,41,16,253,22,0,203,59,48,1,12,25,17,0,60,2
5,203,33,203,33,203,33,58,124,126,129,50,124,126
620 DATA203,150,203,254,201,33,12,127,86,35,94,6,31,35,114,35,11
5,5,194,136,126,14,0,6,32,33,12,127,94,35,86,35,62,128,187,250,1
82,126,202,182,126,62,48,186,250,182,126,202,182,126,197,213,229
;205,63,126,225,209,193,5,194,151,126,65,62,1,211
630 DATA255,2,2,211,255,16,246,0,6,32,33,12,127,94,35,86,35,6
2,128,187,250,0,127,202,0,127,62,48,186,250,0,127,202,0,127,229,
213,197,205,67,126,193,33,76,127,22,0,88,25,25,209,126,131,95,35
;126,130,87,225,43,43,115,35,114,35,5,194,204,126
640 DATA12,62,14,185,194,146,126,201,62,167,77,92,60,88,84,48,10
4,40,118,26,104,12,90,240,34,240,20,12,6,26,34,40,51,48,73,48,90
;40,104,26,90,12,76,254,48,254,34,12,20,26,48,40,62,48,76,40,90,
26,76,12,62,254,48,12,34,26,62,40,76,26,62,12,255
650 DATA0,0,255,1,0,0,1,254,0,255,255,0,254,1,255,2,0,1,0,2,25
5,1,253,0,254,255,255,254,1,254,2,255,3,0,2,1,1,2,255,2,254,1,25
2,0,253,255,254,253,3,255,4,0,3,1,2,2,254,2,253,1
660 G$="PRESS <SPACEBAR> TO START GAME":R$="PRESS <ENTER> FOR IN
STRUCTIONS":FORL=1TO16:LB$=LB$+" "+CHR$(26)+CHR$(24):NEXT:UT$=CH
R$(181)+CHR$(186)+" "+CHR$(151)+CHR$(167)+" "+CHR$(159)+CHR$(175
)+" "+CHR$(151)+CHR$(175)+" "+CHR$(191)
670 UT$=UT$+" "+CHR$(181)+CHR$(186)+" "+CHR$(151)+CHR$(140)+CHR$(
171)+" "+CHR$(183)+CHR$(179)+" "+CHR$(183)+CHR$(187)+" "+CHR$(
151)+CHR$(167)+" "+CHR$(189)+CHR$(176):G0$="G A M E - O V E R"
680 DIMH$(10),HS(10):FORL=1TO15:VB$=VB$+CHR$(191)+CHR$(26)+CHR$(
24):NEXT:HB$=STRING$(62,131):TB$=STRING$(62,176):WB$=CHR$(153)+
CHR$(166):P$=CHR$(166)+CHR$(153):UC$=CHR$(174)+CHR$(157):BH$=CHR
$(183)+CHR$(187):B$=CHR$(128)+CHR$(128)
690 C1=14400:C2=14368:C3=15360:C4=16526:C5=16527:I=205:M=176:EX=
128:CS=49:POKE16527,127:POKEC4,M:FORK=360TO720STEP3:X=USR(K):NEX
T:GOTO860
700 REM ***** START GAME *****
710 LV=1:SC=0:SN=5:PX=1:PY=RND(13):XV=0:YV=0:T=0:TL=15:FP=935:GF
=0
720 POKEC4,CS:POKEC5,126:A=USR(0)
730 PRINT@0,TB$;PRINT@960,HB$;PRINT@0,VB$;PRINT@61,VB$;
740 PRINT@897,"FUEL":POKEC4,M:POKEC5,127:FORL=902TOFP:PRINT@L,
CHR$(143);A=USR(866):NEXT:FORL=1TO7:PRINT@937,STRING$(16,143);
A=USR(970):PRINT@937,"VELOCITY SCANNER";FORK=1TO70:NEXT:NEXTL
750 PRINT@453,"UNIVERSE":PRINT@517,"INTERFACE":FORL=514TO66STE
P-64:PRINT@L,"<==":A=USR(5067):PRINT@L," ";NEXT
760 FORL=834TO514STEP-64:PRINT@L,"<==":A=USR(5067):PRINT@L," ";NEXT
";NEXT
770 PRINT@453,CHR$(200);PRINT@517,CHR$(201);X1=PX:Y1=PY:GOSUB1
50:PRINT@PP,P$;A=USR(531)
780 REM *** NEW CORE ***
790 CX=RND(10)+15:CY=RND(11)+1:X1=CY:Y1=CY:GOSUB150:POKEC4,M:POK
EC5,127:FORL=1TO7:PRINT@PP,B$;FORK=1TO50:NEXT:PRINT@PP,UC$;FOR
K=1TO50:NEXT:A=USR(1000):NEXTL

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```

1260 PRINT@837,STRING$(6,191);CHR$(183);"SPACE";CHR$(187);STRING
$(6,191);" PROBABILITY GRAPPLE (RANGE 5).";PRINT@921,"ONE PER F
RAME ONLY.";PRINT@977,"PRESS <SPACEBAR> TO START GAME";
1270 POKEC4,M:FORV=1TO300:I$=INKEY$:IFI$=" "THENPRINT@1023,"";:F
ORL=1TO16:PRINT:A=USR(L+300):NEXT:GOTO710
1280 PRINT@984,CHR$(200);:PRINT@628,"AVOID";:FORJ=1TO100:NEXT:PR
INT@984,"SPACEBAR";:PRINT@628,CHR$(197);:FORJ=1TO100:NEXT:FORK=3
OOT0304:X=USR(K):NEXT:NEXT
1290 POKEC4,EX:POKEC5,126:FORK=1TO15:POKE32524,RND(127):POKE3252
5,RND(47):A=USR(O):NEXT:GOTO970

**** SINGLE KEY MENU ****

MODEL III

00010 ;*****
00020 ;***** MENU.....A COMMAND MENU *****
00030 ;***** FOR NEWDOS/80 V2.0 MOD III *****
00040 ;***** (C) 1982 BY S.J.TURTLE *****
00050 ;***** HILL END, BRISBANE *****
00060 ;*****
00070 ;***** ORG OF200H *****
00080 START LD A,0EH
00090 CALL 00C3H
00100 CALL 0049H
00110 CP 0DH
00120 JR Z,MENU
00130 PUSH HL
00140 LD C,B
00150 JP 05E3H
00160 MENU LD A,0FH
00170 CALL 00C3H
00180 CALL 01C9H
00190 LD HL,3D00H
00200 LD (4020H),HL
00210 LD HL,TITLE
00220 CALL 021BH
00230 LD HL,3C1AH
00240 LD (4020H),HL
00250 LD HL,0F2F0H
00260 LD B,00
00270 LOOP LD A,(HL)
00280 CP 0FFH
00290 JR Z,DOMENU
00300 CP 00
00310 JR NZ,PRINT
00320 PUSH HL
00330 LD HL,(4020H)
00340 LD (HL),A
00350 DE,HL
00360 POP HL
00370 JR NEXTLN
00380 PRINT CALL 00C3H
00390 INC B

; TURN ON THE CURSOR
; GET SOME INPUT
; IS IT <ENTER> ?
; YES? THEN GO TO MENU
; NO? THEN GO GET MORE
; FROM ROM ROUTINE.

; TURN OFF CURSOR
; CLEAR THE SCREEN

; PRINT THE TITLE

; PRINT THE MENU ITSELF
; IF FFhex THEN NO MORE

; IF 00hex THEN NEXT LINE
; OTHERWISE PRINT CHAR.
; SAVE BUFFER ADDRESS
; GET THE CURSOR POSITION
; AND WRITE 00 TO SCREEN
; DE = CURSOR POSITION
; GET BUFFER ADDR BACK
; AND DO ANOTHER ONE
; PRINT THE CHARACTER
; ADD ONE TO COUNTER

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```

1050 PRINT@334,CHR$(131);CHR$(140);CHR$(176);CHR$(191);STRING$(2
,131);CHR$(191);" ";CHR$(131);CHR$(140);CHR$(191);CHR$(170);CHR
$(149);CHR$(143);STRING$(3,176);CHR$(143);CHR$(197);CHR$(191);
1060 PRINT@460,CHR$(176);STRING$(2,140);STRING$(2,131);CHR$(137)
;CHR$(132);:PRINT@523,CHR$(190);CHR$(129);CHR$(199);STRING$(4,17
6);" ";STRING$(3,176);CHR$(144);" ";STRING$(5,176);
1070 PRINT@587,CHR$(175);CHR$(144);CHR$(198);CHR$(191);" ";CH
R$(191);CHR$(176);CHR$(152);CHR$(140);CHR$(134);" ";CHR$(191);ST
RING$(2,176);
1080 PRINT@652,CHR$(131);STRING$(2,140);STRING$(3,176);CHR$(140)
;CHR$(139);STRING$(4,176);CHR$(143);" ";CHR$(130);CHR$(140);STRI
NG$(2,176);CHR$(191);STRING$(4,176);
1090 FORL=1TO50:I$=INKEY$:IFI$=" "THEN710ELSEIFI$=CHR$(13)THEN12
10ELSENEXTL
1100 FORX=422TO78STEP64:PRINT@X,CHR$(191);:NEXT:PRINT@742,CHR$(
143);:FORX=741TO708STEP-1:PRINT@X,CHR$(140);:NEXT:PRINT@708,CHR$(
143);:FORX=644TO132STEP-64:PRINT@X,CHR$(191);:NEXT:PRINT@68,CHR
$(188);:FORX=69TO107:PRINT@X,CHR$(140);:NEXT:PRINT@108,CHR$(188)
;
1110 I$=INKEY$:IFI$=" "THEN710ELSEIFI$=CHR$(13)THEN1210
1120 FORX=172TO748STEP64:PRINT@X,CHR$(191);:NEXT:FORX=812TO770ST
EP-1:PRINT@X,CHR$(131);:NEXT:FORX=706TO66STEP-64:PRINT@X,CHR$(19
1);:NEXT:FORX=2TO46:PRINT@X,CHR$(179);:NEXT:FORX=11TO814STEP64:
PRINT@X,CHR$(191);:NEXT:PRINT@813,CHR$(176);
1130 I$=INKEY$:IFI$=" "THEN710ELSEIFI$=CHR$(13)THEN1210
1140 POKEC5,127:FORX=812TO770STEP-1:PRINT@X,CHR$(179);:NEXT:ZZ=1
00:FORL=1TO10:POKEC4,I:A=USR(O):POKEC4,M:A=USR(290):FORK=1TOZZ:N
EXT:ZZ=ZZ-10:NEXTL:POKEC4,I
1150 FORL=1TO10:A=USR(O):POKEC4,M:A=USR(290):POKEC4,I:IFI$=
" "THEN710ELSEIFI$=CHR$(13)THEN1210ELSENEXTL
1160 PRINT@478,UC$;:ID=1:GD=-1:Q=906:Q1=842:POKEC4,M:FORL=1TO300
:Q=Q+GD:IFQ>911ORQ<899THENGD=-GD
1170 Q1=Q1+ID:IFQ1<835ORQ1>846THENID=-ID
1180 A=USR(304):PRINT@Q," ";G$;" ";PRINT@Q1," ";R$;" ";:PRINT@P
S,HS$(Z);:FORK=1TO20:NEXT
1190 PRINT@Q+8,CHR$(200);:PRINT@Q1+8,CHR$(197);:PRINT@PS,CHR$(19
6);:FORK=1TO20:NEXT
1200 I$=INKEY$:IFI$=CHR$(13)THEN1210ELSEIFI$=" "THEN710ELSENEXTL
1210 POKE32524,60:POKE32525,22:POKEC4,EX:POKEC5,126:A=USR(O):POK
E32524,60:POKE32525,22:A=USR(O):POKEC4,M:POKEC5,127
1220 FORL=OT062STEP2:A=USR(1000):PRINT@L,LB$;:PRINT@L+1,LB$;:NEX
T:CLS:PRINT@960,STRING$(63,176);:PRINT@0,STRING$(64,131);:FORL=0
TO896STEP64:PRINT@L,CHR$(191);:PRINT@L+63,CHR$(191);:NEXT:POKE16
320,191:POKE16383,191:POKEC4,M
1230 PRINT@77,UT$;:PRINT@197,P$;" VECTORED PROBABILITY SHIFT P
OD.";:PRINT@268,"PILOT THIS TO RETRIEVE URANIUM CORES.";:PRINT@
325,UC$;" URANIUM CORE.";:PRINT@396,"RETURN THESE TO UNIVERSE
INTERFACE TO REFUEL.";
1240 PRINT@453,WB$;" UNSTABLE NEUTRINO WEB.";:PRINT@524,"DANGE
ROUS. THESE EXPLODE ON CONTACT. *****";:PRINT@581,BH$;"
BLACK HOLE.";CHR$(220);"* AVOID *";:PRINT@652,"HI-GRAVITY WARP
S SHIFT DRIVE OF POD. *****";
1250 PRINT@714,"THRUST CONTROLS -->";CHR$(199);CHR$(183);"L";CHR
$(187);" UP. ";CHR$(183);CHR$(92);CHR$(187);" DOWN. ";:PRINT@79
9,CHR$(183);"<";CHR$(187);" LEFT. ";CHR$(183);">";CHR$(187);" RI
GHT.";

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```

00400 INC
00410 JR
00420 NEXTLN
00430 INC
00440 PUSH
00450 PUSH
00460 LD
00470 ADD
00480 LD
00490 SUB
00500 LD
00510 LD
00520 LD
00530 POP
00540 POP
00550 JR
00560 DOMENU
00570 LD
00580 LD
00590 CALL
00600 CALL
00610 CP
00620 JR
00630 CP
00640 JR
00650 CP
00660 JR
00670 CP
00680 JR
00690 CALL
00700 LD
00710 CALL
00720 POP
00730 LD
00740 LD
00750 JP
00760 ;
00770 DOWN
00780 CALL
00790 LD
00800 ADD
00810 LD
00820 RST
00830 JR
00840 JR
00850 BIT
00860 JR
00870 LD
00880 JR
00890 ;
00900 UP
00910 CALL
00920 LD
00930 ADD
00940 BIT
00950 JR

HL
HL
HL
DE
HL,(4020H)
DE,40H
HL,DE
A,L
B
L,A
(4020H),HL
B,00
DE
HL
LOOP
(LASTLN),DE
HL,3C16H
HL
DRAW
0049H
ODH
Z,DOIT
OAH
Z,DOWN
SBH
Z,UP
1FH
NZ,KEYIN
01C9H
HL,51CCH
021BH
DE
HL,4225H
B,04FH
0040H

HL
BLANK
DE,60
HL,DE
DE,(LASTLN)
18H
C,$+11
NC,$+6
6,H
Z,$+5
HL,3C16H
DOMENU+7

HL
BLANK
DE,-68
HL,DE
Z,H
NZ,$+5

; INCREM. BUFFER POINTER
; GET NEXT CHARACTER
; INCREM. BUFFER POINTER
; AND SAVE IT.
; SAVE LAST CURSOR POS.
; GET CURRENT CURSOR POS.
; MOVE DOWN 1 LINE
; MOVE BACK THIS MANY
; AND RESET CURSOR POSN.
; RESET COUNTER
; RESTORE REGISTERS
; DO NEXT LINE
; SAVE LAST LINE FOR REF.
; = TOP OF MENU
; DRAW POINTER ON SCREEN
; WAIT FOR INPUT
; <ENTER> ?
; THEN DO MENU COMMAND
; DOWN ARROW ?
; THEN MOVE DOWN ONE
; UP ARROW ?
; THEN MOVE UP ONE
; <CLEAR> ?
; NO? THEN TRY AGAIN
; OTHERWISE CLEAR SCREEN
; PRINT NEWDOS READY
; REORGANIZE STACK
; SET UP BUFFER POINTER
; NO OF CHARACTERS
; JUMP TO ROM LINE INPUT
; ERASE POINTER
; MOVE DOWN ONE LINE
; IS IT TOO FAR DOWN
; NO?
; YES?
; PAST END OF SCREEN?
; NO?
; TOO FAR THEN BACK TO TOP
; GO AND GET ANOTHER ONE
; ERASE POINTER
; MOVE UP ONE LINE
; TOO HIGH?
; NO?

00960 LD
00970 JR
00980 XOR
00990 LD
00100 LD
01010 INC
01020 DJNZ
01030 RET
01040 LD
01050 EX
01060 LD
01070 LDIR
01080 RET
01090 ;
01100 DOIT
01110 LD
01120 LD
01130 ADD
01140 LD
01150 LOOP3
01160 CP
01170 JR
01180 LD
01190 INC
01200 INC
01210 JR
01220 LD
01230 LD
01240 CALL
01250 LD
01260 RET
01270 ;
01280 POINTR
01290 DEFB
01300 DEFB
01310 DEFB
01320 DEFB
01330 ;
01340 ;
01350
01360 DEFM
01370 DEFB
01380 DEFM
01390 DEFB
01400 DEFM
01410 DEFB
01420 DEFB
01430 DEFB
01440 DEFB
01450 DEFB
01460 DEFM
01470 DEFB
01480 DEFM
01490 DEFB
01500 DEFM
01510 DEFB

HL,3C16H
DOMENU+7
A
B,4
(HL),A
HL
LOOP1
DJNZ
DE,POINTR
DE,HL
BC,04

HL
DE,4225H
A,4
A,L
L,A
A,(HL)
00
Z,PROC
(DE),A
DE
HL
LOOP3
A,ODH
(DE),A
01C9H
HL,4225H
RET
244
245
246
32
03

0F2F0H
'BASIC2/CMD'
00
'DIR'
00
'HIMEM'
00
'FREE'
00
'LIB'
00
'CLEAR MEM=0EFFEH'
00
'MDRET'
00
'SYSTEM 0'
00

; IF YES THEN STAY THERE
; GO TRY ANOTHER ONE
; A=0
; WRITE 4 SPACES
; THATS ALL!
; BLOCK MOVE POINTER
; GET CURSOR POSITION
; = INPUT BUFFER ADDRESS
; POINT HL TO COMMAND STR.
; GET CHARACTER
; IS IT 00 ?
; YES ? MUST BE END
; MOVE TO BUFFER
; NEXT ONE
; NEXT CHARACTER
; GET IT
; PUT CARRIAGE RETURN
; INTO INPUT BUFFER
; CLEAR SCREEN
; HL = INPUT BUFFER
; "RETURN" TO DOS AT 497B
; POINTER CHARACTERS
; + ONE SPACE
; AND END OF TEXT
; START OF COMMAND BUFFER
; ALL COMMANDS ARE
; ENTERED AS A DEFM
; STATEMENT WITH THE
; COMMAND...FOLLOWED BY
; A DEFB STATEMENT OF '00'
; ANY NUMBER UP TO AND
; INCLUDING 16 CAN BE
; ENTERED.
; IF A CLEAR
; STATEMENT IS USED IT
; MUST SET MEM AT FIFTEH
; OTHERWISE MENU/CMD WILL
; BE ERASED.

```

```

F260: 53 63 F3 21 16 3C E5 CD C2 F2 CD 49 00 FE 0D 28
F270: 5B FE 0A 28 1A FE 5B 28 30 FE 1F 20 ED CD C9 01
F280: 21 CC 51 CD 1B 02 D1 21 25 42 06 4F C3 40 00 E1
F290: CD BA F2 11 3C 00 19 ED 5B 63 F3 DF 38 09 30 04
F2A0: CB 74 28 03 21 16 3C 18 BD E1 CD BA F2 11 BC FF
F2B0: 19 CB 54 20 03 21 16 3C 18 AC AF 06 04 77 23 10
F2C0: FC C9 11 E8 F2 EB 01 04 00 ED B0 C9 E1 11 25 42
F2D0: 3E 04 85 6F 7E FE 00 28 05 12 13 23 18 F6 3E 0D
F2E0: 12 CD C9 01 21 25 42 C9 F4 F5 F6 20 03 2B EE CD
F2F0: 42 41 53 49 43 32 2F 43 4D 44 00 44 49 52 00 48
F300: 49 4D 45 4D 00 46 52 45 45 00 4C 49 42 00 43 4C
F310: 45 41 52 20 4D 45 4D 3D 30 45 46 46 45 48 00 44
F320: 44 52 45 54 00 53 59 53 54 45 4D 20 30 00 50 4D
F330: 52 49 56 45 20 30 00 52 4F 55 54 45 00 53 45 54
F340: 43 4F 4D 00 46 4F 52 4D 53 00 43 4C 4F 43 4B 00
F350: 43 4C 4F 43 4B 2C 4E 00 54 49 4D 45 00 44 41 54
F360: 45 00 FF FF 3F 4E 45 57 44 4F 53 2F 38 30 20 56
F370: 65 72 20 32 2E 30 1D 0A 23 23 23 23 23 23 23 23
F380: 23 23 23 23 23 23 23 23 23 23 1D 0A 20 20 20 20
F390: 20 4D 45 4E 55 20 20 20 20 20 20 20 1D 0A 20 20
F3A0: 20 20 20 23 23 23 23 20 20 20 20 20 20 20 1D
F3B0: 0A 0A 55 73 65 20 61 72 72 6F 77 20 68 65 79 73
F3C0: 20 74 6F 1D 0A 6D 6F 76 65 20 70 6F 69 6E 74 65
F3D0: 72 20 74 68 65 6E 1D 0A 20 20 70 72 65 73 73 20
F3E0: 3C 45 4E 45 52 3E 2E 20 20 1D 0A 50 72 65 73
F3F0: 73 20 3C 43 4C 45 41 52 3E 20 74 6F 1D 0A 20 20
F400: 20 65 6E 74 65 72 20 74 65 78 74 2E 20 20 03

```

**** LII/4K LEVEL 2 DEFUSR FUNCTION ****

TRS-80/SYSTEM-80

```

00100 ;* = * = * = * = * = * = * = * = * = * = * = * = *
00110 ;* DEFUSR PROCESSOR
00120 ;* (C)COPYRIGHT ROGER BOWLER 1982
00130 ;* = * = * = * = * = * = * = * = * = * = * = * = *
00140 ;* ORG 415BH
00150 ;* JP DEFPRC
00160 ;* ORG 4040H
00170 DEFPRC RST 8
00180 DEFBC OC1H
00190 RST 8
00200 DEFBC OD5H
00205 CALL 2337H
00210 PUSH HL
00220 CALL 0A7FH
00230 LD (408EH),HL;LOAD EXPRESSION VALUE INTO HL
00240 POP HL
00250 RET
00260 END

```

4040: CF C1 CF D5 CD 37 23 E5 CD 7F 0A 22 8E 40 E1 C9

```

01520 'PDRIVE 0'
01530 DEF 00
01540 'ROUTE'
01550 DEF 00
01560 'SETCOM'
01570 DEF 00
01580 'FORMS'
01590 DEF 00
01600 'CLOCK'
01610 DEF 00
01620 'CLOCK,N'
01630 DEF 00
01640 'TIME'
01650 DEF 00
01660 'DATE'
01670 DEF 00
01680 OFFH
01690 3FFFH
01700 ; THE LAST COMMAND MUST
01710 ; BE FOLLOWED BY FFhex.
01720 ; THIS IS THE LAST LINE
01730 ; POINTING AND WILL BE AUTOMATICALLY UPDATED
01740 ; BY THE PROGRAM.
01750 LASTLN
01760 ;
01770 ; THE TITLE BLOCK
01780 ; EACH LINE SEPARATED BY
01790 ; A CARRIAGE RETURN AND
01800 ; LINE FEED.
01810 #####
01820 MENU
01830
01840 #####
01850 'Use arrow keys to'
01860
01870 'move pointer then'
01880
01890 'press <ENTER>'
01900
01910 'Press <CLEAR> to'
01920
01930 'enter text.'
01940
01950 'ENTRY POINT OF DOS.'
01960 402DH
01970
01980
01990

```

```

F200: 3E 0E CD 33 00 CD 49 00 FE 0D 28 05 E5 48 C3 E3
F210: 05 3E 0F CD 33 00 CD C9 01 21 00 3D 22 20 40 21
F220: 65 F3 CD 1B 02 21 1A 3C 22 20 40 21 F0 F2 06 00
F230: 7E FE FF 28 2A FE 00 20 09 E5 2A 20 40 77 EB E1
F240: 18 07 CD 33 00 04 23 18 E7 23 E5 D5 2A 20 40 11
F250: 40 00 19 7D 90 6F 22 20 40 06 00 D1 E1 18 D1 ED

```

```

10 'DEFUSR PROGRAM 2 (c)Copyright Roger Bowler 1982
20 FOR I=16448 TO 16463 'HEX 4040 TO 404F
30 READ J: POKE I,J: NEXT I
40 DATA 207,193,207,213,205,055,035,229
50 DATA 205,127,010,034,142,064,225,201
60 POKE 16732,64: POKE 16733,64 'HEX 415C/D

10 'DEFUSR PROGRAM 3 (DEFUSR DEMONSTRATION)
20 FOR X=32000 TO 32013
30 READ A: POKE X,A
40 NEXT X
50 DATA 33,0,60,54,191,17,1,60,1,255,3,237,176,201
60 DEFUSR=32000
70 X=USR(0) 'WHITE-OUT SCREEN
80 FOR X=1 TO 1000: NEXT X 'DELAY LOOP

**** L1/4K COMPOUND MULTIPLICATION & LONG DIVISION ****

TRS-80/SYSTEM-80

5 REM C.STOBERT 03-795 6590
10 CLS
20 P:P."COMPOUND MULTIPLICATION AND LONG DIVISION":P.
30 P:P."OCCASIONALLY THE (?) WILL ASK FOR"
40 P:"AN ENTRY WHICH IS ZERO."
50 P:"WHEN THIS OCCURS ENTER THE 0."
100 P:P:"ENTER <1> IF YOU WANT MULTIPLICATION PROBLEMS"
110 IN."AND <2> IF LONG DIVISION":P
115 IF (P<>1)*(P<>2) T.CLS:G.100
120 P:P:IN."ENTER YOUR NAME PLEASE":B$
130 R=0:T=0:D=0
200 CLS:P.A.O,"";:IFT=OP."O.K.":G.280
210 Q=RND(6):ONQ$220,230,240,250,260,270
220 P:"KEEP IT UP":G.280
230 P:"GOOD GOING":G.280
240 P:"GOOD WORK":G.280
250 P:"TOP EFFORT":G.280
260 P:"NICE PROGRESS":G.280
270 P:"NOT TOO BAD IS IT":G.280
280 P:B$:P.A.68,"NOW-":G.280
290 Q=RND(6):ONQ$300,310,320,330,340,350
300 P:"HAVE A TRY AT THIS":G.360
310 P:"NEXT PROBLEM":G.360
320 P:"MIND BENDER #":R+1:G.360
330 P:"TRY ANOTHER ONE":G.360
340 P:"SEE IF THIS STOPS YOU":G.360
350 P:"HEAD SHRINKER #":R+1
360 IFF=2T.1400
400 IFO=1T.420
410 A=RND(149)+100:B=RND(299)+100
420 C=INT(A/100):D=INT((A-C*100)/10)
E=A-C*100-D*10
F=INT(B/100):G=INT((B-F*100)/10)
H=B-F*100-G*10:I=T+1:READX,Y,Z
P.A.X,C:P.A.Y,D:P.A.Z,E:READX,Y,Z
P.A.X,F:P.A.Y,G:P.A.Z,H:P.A.X
F.N=415D419:GOS.1595:N.N
F.N=667D0675:GOS.1595:N.N
F.N=795D0803:P.A.N,"":N.N
N=1:L=0
IF (N=1)+(N=2)T.READV,W,X,Y
IFN=3T.READV,W,X
IFN=4T.READV,W,X,Y,Z
P.A.V,:IN.C:GOS.990
P.A.W,:IN.D:GOS.980
P.A.X,:IN.E:GOS.970
IF (N=1)*(H*A>999)T.P.A.Y,:IN.K:GOS.960
IF (N=2)*(G*A>999)T.P.A.Y,:IN.K:GOS.960
IFN<4T.N=N+1:G.560
P.A.Y,:IN.K:GOS.960
IFA*B>9999T.P.A.Z,:IN.L:GOS.950
M=C+10*D+100*E+1E3*K+1E4*L
IFA*B=MT.P.A.832,"WELL DONE!":O=2:R=R+1:G.700
P.A.832,"SORRY THERE'S A MISTAKE SOMEWHERE":O=1
P:P:IN."PRESS <ENTER> TO CONTINUE":A$
IFR=10T.800
720 REST:CLS:G.200
CLS:P:P:"THAT IS 10 PROBLEMS":B$
P:P:"YOU HAD":T:"TRIES"
P:P:"WHICH GAVE YOU A MARK OF";(1-(T-10)/10)*100;"%
P:P:IN."PRESS <ENTER> TO CONTINUE":A$:REST:CLS:G.100
D.286,288,290,350,352,354
D.482,480,478,476
D.544,542,540,538
D.606,604,602
D.738,736,734,732,730
P.A.Z,L
P.A.Y,K
P.A.X,E
P.A.W,D
P.A.V,C:RET.
1300 READ V,W,X
P.A.V,:IN.C:GOS.990
P.A.W,:IN.D:GOS.980
P.A.X,:IN.E:GOS.970
RET.
F.N=1T022:READZ:N.N:IFO=1T.1420
A=RND(299)+100:B=RND(8999)*RND(10)+10000
F=INT(B*1E-4):G=INT((B-F*1E4)*1E-3)
H=INT((B-F*1E4-G*1E3)/100)
I=INT((B-F*1E4-G*1E3-H*100)/10)
J=B-F*1E4-G*1E3-H*100-I*10
C=INT(A/100):D=INT((A-C*100)/10)
E=A-100*C-10*D:T=T+1
1470 READ X,Y,Z
P.A.X,C:P.A.Y,D:P.A.Z,E
1580 READV,W,X,Y,Z

```



```

580 ON S GOSUB 1001,1002,1003,1004,1005,1006,1007,1008,1009
590 T=T+1
600 IF E=-9 PRINT AT660,"NO STARS LEFT !!!";GOTO 640
620 IF (E<>7)+(A(5)=1) THEN 530
630 PRINT AT 660,"CONGRATULATIONS YOU TOOK";T;"MOVES"
640 PRINT AT 788,"GAME OVER PLAY AGAIN (Y/N)";:INPUT L: IF L <>
1 END
650 RESTORE :GOTO 500
1001 A(1)=-A(1):A(2)=-A(2):A(4)=-A(4):A(5)=-A(5):GOTO2000
1002 A(1)=-A(1):A(2)=-A(2):A(3)=-A(3):GOTO2000
1003 A(2)=-A(2):A(3)=-A(3):A(5)=-A(5):A(6)=-A(6):GOTO2000
1004 A(1)=-A(1):A(4)=-A(4):A(7)=-A(7):GOTO2000
1005 A(2)=-A(2):A(4)=-A(4):A(5)=-A(5):A(6)=-A(6):A(8)=-A(8):GOTO2000
1006 A(3)=-A(3):A(6)=-A(6):A(9)=-A(9):GOTO2000
1007 A(4)=-A(4):A(5)=-A(5):A(7)=-A(7):A(8)=-A(8):GOTO2000
1008 A(7)=-A(7):A(8)=-A(8):A(9)=-A(9):GOTO2000
1009 A(5)=-A(5):A(6)=-A(6):A(8)=-A(8):A(9)=-A(9):GOTO2000
2000 REM PRINT BOARD AND TEST FOR GAME END
2010 E=0:FOR I=1 TO 9
2020 IF A(I)*X=1 THEN 2040
2030 PRINT AT (I+10)+Z,".";GOTO 2050
2040 PRINT AT (I+10)+Z,"*";
2050 E=E+A(I):NEXT I:RETURN
3000 REM INSTRUCTIONS
3010 P.A.O,"THE OBJECT OF THE GAME IS TO SHOOT STARS ON A BOARD"
3020 FOR I=1 TO 9:PRINT AT (I+10)+25,I:NEXT I
3030 P.A.64,"NUMBERED AS IN THE CENTER DIAGRAM TO GET A PATTERN"
3040 P."AS SHOWN IN THE LAST DIAGRAM FROM THE FIRST"
3050 X=1:Z=0:GOSUB 2000:X=-1:Z=53:GOSUB 2000
3060 P.A.192,"TO SHOOT A STAR ENTER THE NUMBER OF IT'S POSITION"
3070 P.P."WHEN A STAR IS SHOT IT WILL EXPLODE CHANGING THE PATT
ERN"
3080 P."THE AREA AFFECTED DEPENDS ON WHICH STAR IS SHOT "
3085 P."A STAR WILL CHANGE TO A DOT AND A DOT TO A STAR"
3090 INPUT "PRESS ENTER FOR MORE INSTRUCTIONS";B$
3100 P.A.O,"A SHOT IN THE CORNER WILL CHANGE THE 4 IN THAT CORN
ER"
3110 P."A SHOT TO POSITION 1 WILL CHANGE POSITIONS 1,2,4,5"
3115 P.
3120 P."A SHOT IN THE CENTER OF A SIDE WILL CHANGE ALL THAT SID
E"
3130 P."A SHOT TO POSITION 2 WILL CHANGE POSITIONS 1,2,3"
3135 P.
3140 P."A SHOT IN THE CENTER WILL CHANGE ALL BUT THE CORNERS"
3150 P."A SHOT TO POSITION 5 WILL CHANGE POSITIONS 2,4,5,6,8"
3160 P.:INPUT "PRESS ENTER TO START GAME";B$
4000 CLS
4010 X=1:Z=-640:GOSUB 2000
4020 FOR I=1 TO 9:PRINT AT (I+10)-615,I:NEXT I
4030 X=-1:Z=-587:GOSUB 2000
4040 P.A.384," START";TAB(28);"LAYOUT";TAB(55);"FINISH"
4050 P.P."YOU CAN GET FOR START TO FINISH IN 11 MOVES GOOD LUCK
!!"
4060 X=1:Z=0:GOTO 526
9999 DATA640,645,650,768,773,778,896,901,906

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1590 P.A.V,F,P.A.A.W,G:P.A.X,H:P.A.Y,I:P.A.Z,J:G.1600
1595 P.A.N,"-":RET.
1600 F.N=46T065:S.(N,10):N.N
1610 F.Y=10T014:S.(45,Y):N.Y
1620 F.N=408T0412:GOS.1595:N.N
1630 F.N=600T0606:GOS.1595:N.N
1640 F.N=794T0800:GOS.1595:N.N
1650 F.N=922T0928:P.A.N,"=":N.N:K=0:READZ
1680 P.A.Z,:IN.G:P.A.Z,G
1690 GOS.1300:GOS.1300
1700 READZ:P.A.Z,I:READZ
1720 P.A.Z,:IN.H:P.A.Z,H:GOS.1300
1740 READY:IFH#A>999T.P.A.Y,:IN.K:GOS.960
1750 GOS.1300:READZ:P.A.Z,J
1760 READZ:P.A.Z,:IN.I:P.A.Z,I:GOS.1300
1780 READY:IFI#A>999T.P.A.Y,:IN.K:GOS.960
1790 P.A.832,"ANY ZEROS MUST";
1800 P.A.897,"BE ENTERED";:GOS.1300
1810 P.A.832,"
";
1820 P.A.897,"
";
1830 P.A.O,"":P.A.64," "
1840 M=100E+10D+C:L=100G+10H+I
1845 P.A.163,"AND R=";M;
1850 IF (L#M)<>BT.1870
1860 P.A.68,"WELL DONE!":O=2:R=R+1:G.1880
1870 P.A.2,"SORRY- THERE'S A MISTAKE SOMEWHERE!":O=1
1880 P.A.960,"":IN."PRESS <ENTER> TO CONTINUE ";A$
1885 IFR=10T.800
1890 REST:CLS:G.200
2000 D.272,274,276,279,281,283,285,287
2010 D.155,347,345,343
2020 D.475,473,471,477
2030 D.157,541,539,537,535
2040 D.669,667,665,671
2050 D.159,735,733,731,729
2060 D.863,861,859

```

*** L1/4K STARSHOOT ***

TRS-80/SYSTEM-80

```

100 REM ***** STAR SHOOT L1/4K. *****
200 REM (C) M.S.YOUNG MAY 82
300 REM
400 REM
500 CLS:Y=1:N=0:T=0:A$=""
510 FOR I=1 TO 9:READ A(I+10):A(I)=-1:NEXT I
520 A(5)=1:X=1:Z=0: INPUT"DO YOU WANT INSTRUCTIONS (Y/N)";L
522 IF L=1 THEN 3000
524 GOTO 4000
526 GOSUB 2000
530 PRINT AT 788,"SHOOT AT "::INPUT S:PRINT AT 660,A$:A$;
540 IF (S<1)+(S>9)PRINT AT660,"INVALID SQUARE";:GOTO 530
570 IFA(S)=-1PRINT AT660,"YOU CAN ONLY SHOOT STARS";:GOTO530

```

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CODE BREAKER	L2/4k	Oct 82	25,34	SAVER AND LOADER	*L2/ESF	Jun 82	15
COMPOSER - MICROBUG		Oct 82	20	SCREEN COPY UTILITY	L2/m1	Feb 82	23,31
CRICKET	L2/16k	Sep 82	20,27	SCREEN FORMATTING NOS. *		Aug 82	7
CURVILINEAR REGRESSION				SERIES IMPEDANCE			
ANALYSIS	L2/16k	Dec 81	28	CIRCUIT	L2/16k	Jul 82	20,29
DATA BASE MGT. SYSTEM	DB/48k	Jan 82	15,29	SKYDIVER	L2/16k	May 82	20,26
DRAW (IN BASIC BASIC)*	L2/16k	Apr 82	15	SOLITAIRE PATCH	L2/16k	Mar 82	25,33
DR. WHO ADVENTURE	L2/16k	Jul 82	21,31	SORTING - SEE ARTICLES	*Jan, Feb, Mar, Jul	82, Jul 83	
+ INPUT/OUTPUT		Oct 82	5,6	SOUND GENERATION	*L2&m1	Feb 82	9
+ MICROBUG		Jul 83	14	STEEPLECHASE	L2/16k	Dec 81	30
DUPLEX	L2/m1	Jan 82	16,31	SUPER HANGMAN	L2/16k	Jan 82	13,24
E=MC SQUARED	L2/4k	Jul 83	17,29	SYSTEM 80 m/1 PATCHES	*L2	Jun 82	5-7
FASTER CASSETTE				3-D MAZE	L2/16k	Dec 81	13
ROUTINES	L2/16km1	Sep 82	18,29	VARIABLE LISTER	*L2	Jun 82	8
FAULT FINDER	L2/16k	Aug 82	19,32				
FILES	L2/48k	Jan 82	13,27	* = PROGRAM IS PART OF AN ARTICLE, AND NOT OTHERWISE INDEXED.			
FLASHING MESSAGE				HARDWARE			
ROUTINE	L2/16k	Feb 82	23,29	ADDING A JOYSTICK		Sep 82	13
FLEXITIME	L2/4k	Oct 82	25,33	COMPUTER ANATOMY - PART 1		Oct 82	11
FLIP	L2/16k	Apr 82	23,32	DOUBLE SYSTEM-80 RAM FOR \$15		Jul 83	10
GOLF	L2/16k	Jul 83	15,25	EXPANSION INTERFACE FUNCTIONS		Feb 82	22
GRAPHIC PACKER				JOYSTICKS & I/O PORTS PART 5		Jan 82	4
(AUTOMATIC)		Jul 82	15-17	JOYSTICKS & I/O EDGE CONNECTORS		Jul 82	7
HEX CONSTANTS	L2/16k	Jul 82	19,29	MICRO-80 L/CASE FOR SYSTEM-80		May 82	14
HORSE PERF. GUIDE (SA)	L2/16k	Jul 83	17,31	SIMPLE INTERFACE FOR MODEL 33			
INCOME TAX CALCULATOR	L2/16k	Feb 82	27,34	TELETYPE		Mar 82	9
INPUT DEMONSTRATION	L2/4k	Oct 82	24,33	SM ELECTRONICS FOR OLYMPIA ES100		May 82	16
JUMBLED PLAYERS	L2/16k	May 82	21,31	SYSTEM-80 CLOCK MODIFICATION		Aug 82	10
				+ MICROBUG		Oct 82	20
				SYSTEM-80 ADD-ON KEYPAD		Aug 82	15
				VIDEO CONTRAST IMPROVED -CHIFFON		Sep 82	5
				WINCHESTER DISK INTRO. -EDITORIAL		Feb 82	2

MICROBUGS

BASIC + LABELS	Jan 82	35
COMPOSER/BAS CHANGES	Oct 82	20
DEF FN ADDENDUM	Oct 82	19
DOCTOR WHO ADVENTURE	Jul 83	14
FREE SOFTWARE LIBRARY - COMPOSER	Jul 83	14
HOUSEHOLD ACCOUNTS	Sep 82	8
JOYSTICKS & I/O PORTS - EDGE CONNECTOR STANDARDS	Jul 82	7
JUMP THE RAPIDS ON MODEL 3	Oct 82	20
LEVEL 1 IN LEVEL 2	Sep 82	7
LOTTO PREDICTOR (SEP 80)	Jul 82	6
MICRO GRAND PRIX	Aug 82	8
MOVIE UTILITY FOR MODEL 3	Oct 82	20
SAVING/LOADING m/1 PROGS ON WAFER	Jul 82	6
SYSTEM-80 CLOCK MODIFICATIONS	Oct 82	20

EVALUATIONS AND REVIEWS - SOFTWARE

ACCEL3 vs. ZBASIC	Oct 82	13
BATTLEGROUND	Sep 82	11
BRYANT'S EDUCATIONAL - MONEY BOX - DECIMAL DAN - ALADDIN - TOWERS & CROCODILE	Apr 82	7
DATESTONES OF RYN (DUNJONQUEST)	Sep 82	9
DUNJONQUEST - TEMPLE OF APSHAI	May 82	12
DUPLITAPE	Sep 82	11
+ AVAILABILITY	Oct 82	13
ESOS - EXATRON FLOPPY OPER. SYS	Aug 82	13
FS1 - FLIGHT SIMULATOR	May 82	13
MICROSOFT LEVEL 3 BASIC	Oct 82	17
MODEL 4 TRS-80 (EDITORIAL)	Jul 83	2
TC-8 CASSETTE OPERATING SYSTEM	Sep 82	12
TRS-80 ASTROLOGY	Jul 83	13
VERSAFILE	Jul 82	7
VISICALC	Sep 82	10
WOP-1 DICK SMITH'S WORD PROCESSOR	Oct 82	18
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EVALUATIONS AND REVIEWS - HARDWARE

LNW-80 MARK 2 COMPUTER	Oct 82	15
TRS-80 COLOUR COMPUTER	Dec 81	3
TRS-80 COLOUR COMPUTER	Apr 82	17

INPUT/OUTPUT (LETTERS TO EDITOR)

Those with helpful information only

ASYLUM ADVENTURE HINTS	Oct 82	6,7
BLOCK MOVING MORSE PROGRAM	Oct 82	6
BREAK DISABLE	Jan 82	5
COPYING MICROCHESS BY COPIER	Jun 82	4
CURSOR MEMORY POSITIONS	Jun 82	3-4
DATA LOST FROM TAPES	Jul 82	4
DR. WHO ADVENTURE - ENOUGH MEMORY	Oct 82	6
DR. WHO ADVENTURE - ENOUGH MEMORY	Jul 83	3
ESCAPE FROM TRAMM SOLUTION	Jul 82	4
ESCAPE TO TRAMM	Jun 82	4
FILES FOR SYSTEM-80	May 82	17
LOADING EDTASM+ SYSTEM TAPES/ RECORDER HEAD ALIGNMENT	Jul 83	4
LOCKING OUT RESET IN LEVEL 2	Sep 82	3
MAKING SYSTEM TAPE FROM TANDY MICROCHESS TAPE	Apr 82	4
NON-USE OF DEFFN IN SYSTEM-80	Sep 82	3
ONE LINE MERGE PROGRAM	Sep 82	4
POKING m/1 INTO MEMORY	Jul 82	3
PRINTER DRIVER - SCRIPSIT/SERIAL	Sep 82	5-7
REAL TIME CLOCK LOCATION/MEMORY	Aug 82	4
RELOCATABLE CALLS IN m/1	Aug 82	4
REVERSING PRINT & LPRINT ON SYSTEM-80	Apr 82	20
SARGON ON DISK	Mar 82	2
SAVING OBJECT FILES ON ESF	Mar 82	3

SCRIPSIT CONVERSION FOR SYSTEM-80	May 82	16
SKYDIVER ERRORS/COMPUTER FAULT	Jul 82	5
SLOW LIST FUNCTION	Jan 82	6
SOUND EFFECTS RE-VISITED	Feb 82	4
SYSTEM-80 - COPYING TAPE TO DISK	Jul 82	4
SYSTEM-80 - MODS FOR JOYSTICK	Sep 82	3
SYSTEM-80 - SOUND EFFECTS RE-VISIT	Jul 82	5
SYSTEM-80 - TAPE HEAD CLEANING	Jul 82	4
TABBING BEYOND 64	Jan 82	5
VIDEO CONTRAST IMPROVEMENT USING CHIFFON	Sep 82	5

MISCELLANEOUS ARTICLES AND ITEMS

BASIC BASIC PART 1 (INCL DRAW) #	Apr 82	13
BASIC BASIC PART 2	Jun 82	7
BASIC INTERCHANGE BETWEEN 80's AND OTHER COMPUTERS	Jun 82	10
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BETTER BASIC PROGRAMMING PART 7 #	Feb 82	6
ENCHANCEMENTS TO MODEL 2 (MODEL 16)	Dec 81	2
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IT ALL DEPENDS (LOGICAL OPERATORS IN CONDITIONAL STATEMENTS)	Mar 82	4
LESS BASIC BASIC	Aug 82	7
LEV 1 - LEV 2 PROGRAM CONVERSION	Apr 82	5
LOWER CASE IN NEW MODEL 1	Dec 81	2
MAKING DECISIONS THE EASY WAY	Oct 82	9
MODEL 3 GETS RUN-AROUND AS STATUS SYMBOL	May 82	9
NEWDOS 2.1 - JKL FEATURE v. MX-80	May 82	18
PRINCIPLES & GUIDELINES FOR WRITING INSTRUCTIONAL PROGRAMS	May 82	4
SAVE & LOAD m/1 PROGS ON WAFER + MICROBUG	Jun 82	13
SAVING DISK SPACE BY MERGING PROGRAMS OR ROUTINES	#Sep 82	8
SUBMITTING PROGS FOR PUBLICATION	Oct 82	7
THEORY + TECH. FOR SORTING - 3	#Jan 82	6
+ MICROBUG	#Feb 82	5
THEORY + TECH. FOR SORTING - 4	#Feb 82	10
THEORY + TECH. FOR SORTING - 5	#Mar 82	12
THEORY + TECH. FOR SORTING - 6	#Jul 82	8
THEORY + TECH. FOR SORTING - 7	#Jul 83	6
TRANSFERRING TOUCHTYPE TO DISK	#Feb 82	21
USING EDTASM, SCRIPSIT & m/1 PROGRAMS ON SYSTEM-80	Jun 82	4-7
USING THE LEV 1 ARRAY EFFECTIVELY	Feb 82	21

KALEIDOSCOPE - COLOUR COMPUTER NOTES

MEMORY POINTER LOCATIONS	Jul 83	4
PRINTING DISK DIRECTORY	Oct 82	3
SPEED UP POKES	Jul 83	4

PEACH BOWL - PEACH COMPUTER NOTES

RANDOM NUMBER DIFFERENCES	Jul 83	4
UNPROTECTING PROTECTED PROGRAMS	Oct 82	3
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GROUP ONE - MODEL 1 NOTES

KEYBD.TIPS/DISK MOD. FOR GOLF/BAS	Jul 83	5
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FORM THREE - MODEL 3 NOTES

MODEL 1 & 3 ROM DIFFERENCES	Oct 82	4
READING DISTRIBUTION DOS	Jul 83	5

***** NEXT MONTH'S ISSUE *****

Next month's issue will contain at least the following programs plus the usual features and articles. An (80) after a program title indicates that the program will be for TRS-80 Model 1/3 or System 80/Video Genie. A (CC) indicates that the program will be for the TRS-80 Colour Computer and (Peach) that the program is for the Hitachi Peach.

** DESERT CHASE (80) L2/16K **

In this graphic game of high adventure, the object is to travel across the vast Simpson Desert. Your journey is made perilous by such hazards as wild tribesmen, lack of water and sandstorms.

** FORMATION (80) L2/16K **

Formation is an Electronic Form Creation and Data Entry System. The program lets you design and store a form that will later accept operator input. The data that is entered by the operator is transformed into normal BASIC DATA lines that can be manipulated by your own program.

** OTHELLO (CC) **

Othello is written for the 16K Colour Computer, it is a game of strategy for two players and is based on the board game of the same name. The game is played on a 8x8 board and you must outflank your opponent to flip his playing pieces to your colour.

** PRIORITIES (80) L2/16K **

It seems that the Razor Gang have been responsible for a lot of things, even this program. The Doctor who wrote it needed to order the activities if his hospital into order of priority. I don't know if the razor gang will be after you, but you too can now order your priorities.

** THE TOWERS OF HANOI (CC & PEACH) **

This popular game has now been converted to run on your Hitachi Peach or Colour Computer with the addition of colour and sound. You have three pegs and a number of disks. You must get all the disks from the leftmost peg to the rightmost peg by moving one disk at a time without putting a large disk on top of a small disk. It will drive you mad!!

** REGISTER DISPLAY PROGRAM (Peach) **

This program provides an easy means of examining register contents at any time during the operation of a program. The Register Display program can provide information at any point in a program and can then revert to either the program under test, to BASIC command level or to the machine language monitor.

APPLICATION FOR PUBLICATION
OF A PROGRAM
IN MICRO-80

Date

To MICRO-80
SOFTWARE DEPT.
P.O. BOX 145,
MORPHETT VALE, SA., 5162

Please consider the enclosed program for
publication in MICRO-80.

Name

Address

Postcode

*** CHECK LIST ***

Please ensure that the cassette or disk is clearly marked with your name and address, program name(s), Memory size, Level I, II, System 1 or 2, Edtasm, System, etc. The use of REM statements with your name and address is suggested, in case the program becomes separated from the accompanying literature.

Ensure that you supply adequate instructions, notes on what the program does and how it does it, etc.

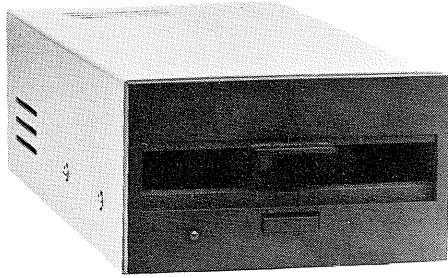
For system tapes, the start, end, and entry points, etc.

The changes or improvements that you think may improve it.

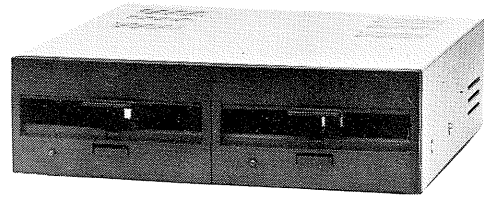
Please package securely — padabags are suggested — and enclose stamps or postage if you want your cassette or disk returned.



SAVE A PACKET ON MICRO-80's DISK DRIVE PACKAGES FOR TRS-80 MODEL 1 AND SYSTEM 80 MICROCOMPUTERS



SINGLE DRIVE PACKAGE from ... \$499



DUAL DRIVE PACKAGE from ... \$874

Bigger volume means lower cost price, which we are passing on to you. Avoid the annoying bundle of cables, wires and separate boxes. MICRO-80 is now offering our well-proven MPI disk drives in attractive, self-contained single or dual-drive cabinets complete with internal power supply. Our drive Ø and dual-drive packages also include the appropriate version of DOSPLUS and dual-drive cable.

The best news of all is the specially reduced package prices ...

SAVE \$23 — \$107 over our already low prices!

Choose the appropriate system from the table below:

DRIVE TYPE	No. of Tracks	No. of Heads	Capacity	Dosplus Version	Price	* Saving
DRIVE Ø						
1 x MPI B51	40	1	100K	3.4	\$499	\$137.95
1 x MPI B52	40	2	200K	3.4	\$639	\$97.95
1 x MPI B92	80	2	400K	3.4	\$799	\$107.95
DRIVE 1						
1 x MPI B51	40	1	100K	—	\$415	\$33.00
1 x MPI B52	40	2	200K	—	\$525	\$23.00
1 x MPI B92	80	2	400K	—	\$695	\$23.00

*Represents the saving compared with buying all the items included in the package separately

•Drive Ø package includes one bare disk drive, self-contained single-drive cabinet/power supply as illustrated, two drive cable and the version of DOSPLUS indicated.

•Drive 1 package includes one bare disk drive and self-contained single-drive cabinet/power supply as illustrated.

***If it's a dual-drive system you need, then take advantage of our dual-drive package and
SAVE a further \$40 on the price of two single-drive packages ...***

DRIVE TYPE	No. of Tracks	No. of Heads	Capacity	Dosplus Version	Price
2 x MPI B51	40 ea	1 ea	2 x 100K	3.4	\$874
2 x MPI B52	40 ea	2 ea	2 x 200K	3.4	\$1125
2 x MPI B92	80 ea	2 ea	2 x 400K	3.4	\$1454

Dual-drive package includes two bare disk drives, self-contained dual-drive cabinet/power supply as illustrated, two drive cables and the version of Dosplus indicated.

NOTE: All 40 track drives are completely compatible with 35 track operating systems such as TRSDOS. DOSPLUS allows you to realise an additional 14% capacity compared with TRSDOS. Under DOSPLUS 3.4, 80 track drives can read 35/40 track diskettes.

All disk drive components are still available separately:

BARE DRIVES — MPI drives offer the fastest track-to-track access time (5 milliseconds) available. All drives are capable of operating in double density for 80% greater storage capacity.

	Price	Freight		Price	
MPI B51 40 track, single-head, 100K	\$349	\$5.00	Self-contained, single drive cabinet/power supply	\$99	\$5.00
MPI B52 40 track, dual-head, 200K	\$449	\$5.00	Self-contained, dual-drive cabinet/power supply	\$135	\$5.00
MPI B92 80 track, dual-head, 400K	\$619	\$5.00	Two drive cable	\$39	\$2.00
Separate, dual-drive power supply	\$85	\$8.00	Four drive cable	\$49	\$2.00
			DOSPLUS 3.4	\$149.95	\$2.00

Prices are FOB Adelaide. Add \$5.00 freight for single drive package, \$10.00 for dual-drive package. Prices are in Australian dollars. Freight is road freight anywhere in Australia.

All items carry a 90-day parts and labour warranty. Repairs to be carried out in our Adelaide workshops.

MICRO-80

LEVEL 2 ROM ASSEMBLY LANGUAGE TOOLKIT by Edwin Paay FOR TRS-80 MODEL 1, MODEL 3 AND SYSTEM 80/VIDEO GENIE

This is a new package consisting of two invaluable components:

- **A ROM REFERENCE** Manual which catalogues, describes and cross-references the useful and usable ROM routines which you can incorporate into your own machine language or BASIC programs.
- **DEBUG**, a machine language disassembling debugging program to speed up the development of your own machine language programs. DEBUG is distributed on a cassette and may be used from disk or cassette.

Part 1 of the ROM REFERENCE manual gives detailed explanations of the processes used for arithmetical calculations, logical operations, data movements etc. It also describes the various formats used for BASIC, System and Editor/Assembly tapes. There is a special section devoted to those additional routines in the TRS-80 Model 3 ROM. This is the first time this information has been made available, anywhere. Differences between the System 80/Video Genie are also described. Part 1 is organised into subject specific tables so that you can quickly locate all the routines to carry out a given function and then choose the one which meets your requirements.

Part 2 gives detailed information about each of the routines in the order in which they appear in the ROM. It describes their functions, explains how to use them in your own machine language programs and notes the effect of each on the various Z80 registers.

Part 2 also details the contents of system RAM and shows you how to intercept BASIC routines. With this knowledge, you can add your own commands to BASIC, for instance, or position BASIC programs in high memory — the only restriction is your own imagination!

The Appendices contain sample programmes which show you how you can use the ROM routines to speed up your machine language programs and reduce the amount of code you need to write.

DEBUG: Eddy Paay was not satisfied with any of the commercially available debugging programs, so he developed his own. DEBUG: allows you to single-step through your program; has a disassembler which disassembles the next instruction before executing it or allows you to bypass execution and pass on through the program, disassembling as you go; displays/edits memory in Hex or ASCII; allows Register editing; has the ability to read and write System tapes and all this on the bottom 3 lines of your screen, thus freeing the rest of the screen for program displays. Four versions of DEBUG are included in the package to cope with different memory sizes.

The best news of all is the price. The complete Level 2 ROM ASSEMBLY LANGUAGE TOOLKIT is only:

- Aus. \$29.95 + \$2.00 p&p
- UK £18.00 + £1.00 p&p

SPECIAL OFFER TO OWNERS OF THE LEVEL II ROM REFERENCE MANUAL ...

UPGRADE TO THIS ASSEMBLY LANGUAGE TOOLKIT FOR ONLY \$19.95!

Send back your original Level II ROM Reference Manual plus a cheque, money order or Bankcard authorisation for \$19.95 plus \$2.00 p&p and we will send you the new ASSEMBLY LANGUAGE TOOLKIT

MICRO-80